CETIFICATION

SDG No:	JC20934	Laboratory:	Accutest, New Jersey
Site:	BMS, Building 5 Area, PR Humacao, PR	Matrix:	Soil/Groundwater

SUMMARY: Groundwater and soil samples (Table 1) were collected on the BMSMC facility – Building 5 Area. The BMSMC facility is located in Humacao, PR. Samples were taken May 23-24, 2016 and were analyzed in Accutest Laboratory of Dayton, New Jersey for the ABN TCL Special List (1,4-Dioxane and Naphthalene were analyzed following the SIM technique); TCL pesticides list; and for low molecular weight alcohols (LMWA) the results were reported under SDG No.: JC20934. Results were validated using the latest validation guidelines (July, 2015) of the EPA Hazardous Waste Support Section. The analyses performed are shown in Table 1. Individual data review worksheets are enclosed for each target analyte group. The data sample organic data samples summary form shows for analytes results that were qualified.

In summary the results are valid and can be used for decision taking purposes.

Table 1. Samples analyzed and analysis performed

SAMPLE ID	SAMPLE DESCRIPTION	MATRIX	ANALYSIS PERFORMED
JC20934-1	RA4-GWS	Groundwater	ABN TCL special list; 1,-4-dioxane and Naphthalene (SIM); LMWA
JC20934-2	RA8 (5-6)	Soil	ABN TCL special list; 1,-4-dioxane and Naphthalene (SIM); LMWA
JC20934-3	RA8D (5-6)	Soil	ABN TCL special list; 1,-4-dioxane and Naphthalene (SIM); LMWA
JC20934-4	MW21 (7-8)	Soil	ABN TCL special list; 1,-4-dioxane and Naphthalene (SIM); LMWA
JC20934-5	RA8-GWD	Groundwater	ABN TCL special list; 1,-4-dioxane and Naphthalene (SIM); LMWA
JC20934-6	RA8-GWS	Groundwater	ABN TCL special list; 1,-4-dioxane and Naphthalene (SIM); LMWA

Reviewer Name: Rafael Infante
Chemist License 1888

Signature: Rafael Infante

Date: June 18, 2016

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Report of Analysis

Client Sample ID:	RA4-GWS		
Lab Sample ID:	JC20934-1	**Date Sampled:**	05/23/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P26386.D	1	05/26/16	JJ	05/25/16	OP94258	E6P1228
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.6	0.91	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.6	0.99	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.6	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.6	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.99	ug/l	
	3&4-Methylphenol	ND	2.2	0.98	ug/l	
88-75-5	2-Nitrophenol	ND	5.6	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	5.6	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.44	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.6	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.6	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.6	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.50	ug/l	
100-52-7	Benzaldehyde	ND	5.6	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.23	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.24	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.38	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.45	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.51	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.24	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	4.8	5.6	0.38	ug/l	J
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA4-GWS		
Lab Sample ID:	JC20934-1	**Date Sampled:**	05/23/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.72	ug/l	
218-01-9	Chrysene	ND	1.1	0.20	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.28	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.45	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.41	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.53	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
123-91-1	1,4-Dioxane	49.6	1.1	0.73	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.37	ug/l	
132-64-9	Dibenzofuran	ND	5.6	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.55	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.37	ug/l	
78-59-1	Isophorone	ND	2.2	0.31	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.6	0.31	ug/l	
99-09-2	3-Nitroaniline	ND	5.6	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.6	0.49	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.6	0.25	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		14-88%

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Report of Analysis

Client Sample ID:	RA4-GWS		
Lab Sample ID:	JC20934-1	**Date Sampled:**	05/23/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	26%		10-110%
118-79-6	2,4,6-Tribromophenol	61%		39-149%
4165-60-0	Nitrobenzene-d5	61%		32-128%
321-60-8	2-Fluorobiphenyl	64%		35-119%
1718-51-0	Terphenyl-d14	49%		10-126%

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Report of Analysis

Client Sample ID:	RA4-GWS		
Lab Sample ID:	JC20934-1	**Date Sampled:**	05/23/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P16434.D	1	05/26/16	LK	05/25/16	OP94258A	E4P872
Run #2							

	Initial Volume	Final Volume
Run #1	900 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	0.150	0.11	0.033	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	79%		24-125%
321-60-8	2-Fluorobiphenyl	59%		19-127%
1718-51-0	Terphenyl-d14	66%		10-119%

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N = Indicates presumptive evidence of a compound

Raw Data: GH105221.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA4-GWS		
Lab Sample ID:	JC20934-1	**Date Sampled:**	05/23/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH105221.D	1	05/26/16	XPL	n/a	n/a	GGH5301
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	89%		56-145%
111-27-3	Hexanol	97%		56-145%

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J = Indicates an estimated value
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Report of Analysis

Client Sample ID:	RA8 (5-6)		
Lab Sample ID:	JC20934-2	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.9
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P26614.D	1	06/02/16	AC	05/26/16	OP94277	E6P1235
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	79	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	ND	79	25	ug/kg	
	3&4-Methylphenol	ND	79	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	110	ug/kg	
87-86-5	Pentachlorophenol	ND	200	37	ug/kg	
108-95-2	Phenol	ND	79	21	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	200	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg	
83-32-9	Acenaphthene	ND	39	14	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.5	ug/kg	
120-12-7	Anthracene	ND	39	24	ug/kg	
1912-24-9	Atrazine	ND	79	17	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.6	ug/kg	
92-52-4	1,1'-Biphenyl	ND	79	5.4	ug/kg	
100-52-7	Benzaldehyde	ND	200	9.8	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
86-74-8	Carbazole	ND	79	5.7	ug/kg	

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Report of Analysis

Client Sample ID:	RA8 (5-6)		
Lab Sample ID:	JC20934-2	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.9
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	79	16	ug/kg	
218-01-9	Chrysene	ND	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	17	ug/kg	
132-64-9	Dibenzofuran	ND	79	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	79	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.8	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	79	9.2	ug/kg	
206-44-0	Fluoranthene	ND	39	18	ug/kg	
86-73-7	Fluorene	ND	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	18	ug/kg	
78-59-1	Isophorone	ND	79	8.4	ug/kg	
90-12-0	1-Methylnaphthalene	ND	79	7.7	ug/kg	
91-57-6	2-Methylnaphthalene	ND	79	8.9	ug/kg	
88-74-4	2-Nitroaniline	ND	200	9.3	ug/kg	
99-09-2	3-Nitroaniline	ND	200	9.9	ug/kg	
100-01-6	4-Nitroaniline	ND	200	10	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	ND	39	13	ug/kg	
129-00-0	Pyrene	ND	39	13	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	200	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	73%		30-106%
4165-62-2	Phenol-d5	74%		30-106%

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Report of Analysis

Client Sample ID:	RA8 (5-6)		
Lab Sample ID:	JC20934-2	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.9
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	77%		24-140%
4165-60-0	Nitrobenzene-d5	86%		26-122%
321-60-8	2-Fluorobiphenyl	85%		36-112%
1718-51-0	Terphenyl-d14	93%		36-132%

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Raw Data: 4P16646.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8 (5-6)		
Lab Sample ID:	JC20934-2	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D BY SIM SW846 3546	**Percent Solids:**	82.9
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P16646.D	1	06/04/16	JJ	05/26/16	OP94277A	E4P886
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	ND	3.9	0.79	ug/kg	
91-20-3	Naphthalene	ND	3.9	0.48	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	85%		15-138%
321-60-8	2-Fluorobiphenyl	53%		12-148%
1718-51-0	Terphenyl-d14	81%		10-157%

(a) Not accredited for this compound at the time of analysis, but all method requirements were followed.

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GH105208.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8 (5-6)		
Lab Sample ID:	JC20934-2	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	82.9
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH105208.D	1	05/25/16	XPL	n/a	n/a	GGH5300
Run #2							

	Initial Weight
Run #1	5.1 g
Run #2	

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	120	82	ug/kg	
78-83-1	Isobutyl Alcohol	ND	120	70	ug/kg	
67-63-0	Isopropyl Alcohol	ND	120	68	ug/kg	
71-23-8	n-Propyl Alcohol	ND	120	48	ug/kg	
71-36-3	n-Butyl Alcohol	ND	120	64	ug/kg	
78-92-2	sec-Butyl Alcohol	ND	120	63	ug/kg	
67-56-1	Methanol	ND	240	57	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	84%		52-141%
111-27-3	Hexanol	84%		52-141%

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Rafael Infante Méndez
LIC # 1888
QUIMICO LICENCIADO

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 6P26615.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8D (5-6)		
Lab Sample ID:	JC20934-3	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.0
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P26615.D	1	06/02/16	AC	05/26/16	OP94277	E6P1235
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	41	ug/kg	
95-48-7	2-Methylphenol	ND	78	25	ug/kg	
	3&4-Methylphenol	ND	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	190	36	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	39	13	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
98-86-2	Acetophenone	ND	190	8.3	ug/kg	
120-12-7	Anthracene	ND	39	24	ug/kg	
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	ND	78	5.3	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.2	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	ND	78	5.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA8D (5-6)		
Lab Sample ID:	JC20934-3	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.0
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	78	15	ug/kg	
218-01-9	Chrysene	ND	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	32	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	17	ug/kg	
132-64-9	Dibenzofuran	ND	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	ND	39	17	ug/kg	
86-73-7	Fluorene	ND	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.3	ug/kg	
90-12-0	1-Methylnaphthalene	ND	78	7.6	ug/kg	
91-57-6	2-Methylnaphthalene	ND	78	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	ND	39	13	ug/kg	
129-00-0	Pyrene	ND	39	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	67%		30-106%
4165-62-2	Phenol-d5	68%		30-106%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA8D (5-6)		
Lab Sample ID:	JC20934-3	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	84.0
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	66%		24-140%
4165-60-0	Nitrobenzene-d5	77%		26-122%
321-60-8	2-Fluorobiphenyl	77%		36-112%
1718-51-0	Terphenyl-d14	83%		36-132%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4P16647.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8D (5-6)		
Lab Sample ID:	JC20934-3	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D BY SIM SW846 3546	**Percent Solids:**	84.0
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P16647.D	1	06/04/16	JJ	05/26/16	OP94277A	E4P886
Run #2							

	Initial Weight	Final Volume
Run #1	30.7 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	ND	3.9	0.78	ug/kg	
91-20-3	Naphthalene	ND	3.9	0.47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		15-138%
321-60-8	2-Fluorobiphenyl	52%		12-148%
1718-51-0	Terphenyl-d14	73%		10-157%

(a) Not accredited for this compound at the time of analysis, but all method requirements were followed.

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ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	RA8D (5-6)		
Lab Sample ID:	JC20934-3	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	84.0
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH105209.D	1	05/25/16	XPL	n/a	n/a	GGH5300
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	120	82	ug/kg	
78-83-1	Isobutyl Alcohol	ND	120	70	ug/kg	
67-63-0	Isopropyl Alcohol	ND	120	68	ug/kg	
71-23-8	n-Propyl Alcohol	ND	120	48	ug/kg	
71-36-3	n-Butyl Alcohol	ND	120	65	ug/kg	
78-92-2	sec-Butyl Alcohol	ND	120	63	ug/kg	
67-56-1	Methanol	ND	240	57	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	79%		52-141%
111-27-3	Hexanol	89%		52-141%

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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 6P26616.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW21 (7-8)		
Lab Sample ID:	JC20934-4	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.4
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P26616.D	1	06/02/16	AC	05/26/16	OP94277	E6P1235
Run #2							

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	78	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	33	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	69	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	42	ug/kg	
95-48-7	2-Methylphenol	ND	78	25	ug/kg	
	3&4-Methylphenol	ND	78	32	ug/kg	
88-75-5	2-Nitrophenol	ND	190	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	100	ug/kg	
87-86-5	Pentachlorophenol	ND	190	37	ug/kg	
108-95-2	Phenol	ND	78	20	ug/kg	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	190	26	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	23	ug/kg	
83-32-9	Acenaphthene	ND	39	13	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
98-86-2	Acetophenone	ND	190	8.4	ug/kg	
120-12-7	Anthracene	ND	39	24	ug/kg	
1912-24-9	Atrazine	ND	78	17	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	78	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	78	9.5	ug/kg	
92-52-4	1,1'-Biphenyl	ND	78	5.3	ug/kg	
100-52-7	Benzaldehyde	ND	190	9.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	78	9.3	ug/kg	
106-47-8	4-Chloroaniline	ND	190	14	ug/kg	
86-74-8	Carbazole	ND	78	5.6	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW21 (7-8)		
Lab Sample ID:	JC20934-4	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.4
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	78	15	ug/kg	
218-01-9	Chrysene	ND	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	78	8.3	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	78	17	ug/kg	
108-60-1	bis(2-Chloroisopropyl)ether	ND	78	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	78	13	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	78	32	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	17	ug/kg	
132-64-9	Dibenzofuran	ND	78	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	78	6.3	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	78	9.7	ug/kg	
84-66-2	Diethyl phthalate	ND	78	8.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	78	6.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	78	9.1	ug/kg	
206-44-0	Fluoranthene	ND	39	17	ug/kg	
86-73-7	Fluorene	ND	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	78	9.8	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	18	ug/kg	
78-59-1	Isophorone	ND	78	8.3	ug/kg	
90-12-0	1-Methylnaphthalene	ND	78	7.6	ug/kg	
91-57-6	2-Methylnaphthalene	ND	78	8.8	ug/kg	
88-74-4	2-Nitroaniline	ND	190	9.2	ug/kg	
99-09-2	3-Nitroaniline	ND	190	9.7	ug/kg	
100-01-6	4-Nitroaniline	ND	190	10	ug/kg	
98-95-3	Nitrobenzene	ND	78	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	78	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	ND	39	13	ug/kg	
129-00-0	Pyrene	ND	39	12	ug/kg	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	190	9.9	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	78%		30-106%
4165-62-2	Phenol-d5	78%		30-106%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW21 (7-8)		
Lab Sample ID:	JC20934-4	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3546	**Percent Solids:**	82.4
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	76%		24-140%
4165-60-0	Nitrobenzene-d5	89%		26-122%
321-60-8	2-Fluorobiphenyl	90%		36-112%
1718-51-0	Terphenyl-d14	92%		36-132%

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ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4P16648.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW21 (7-8)		
Lab Sample ID:	JC20934-4	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846 8270D BY SIM SW846 3546	**Percent Solids:**	82.4
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P16648.D	1	06/04/16	JJ	05/26/16	OP94277A	E4P886
Run #2							

	Initial Weight	Final Volume
Run #1	31.2 g	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
123-91-1	1,4-Dioxane [a]	ND	3.9	0.78	ug/kg	
91-20-3	Naphthalene	ND	3.9	0.47	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	81%		15-138%
321-60-8	2-Fluorobiphenyl	61%		12-148%
1718-51-0	Terphenyl-d14	78%		10-157%

(a) Not accredited for this compound at the time of analysis, but all method requirements were followed.

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Raw Data: GH105210.D

SGS Accutest

Report of Analysis

Client Sample ID:	MW21 (7-8)		
Lab Sample ID:	JC20934-4	**Date Sampled:**	05/24/16
Matrix:	SO - Soil	**Date Received:**	05/25/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	82.4
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH105210.D	1	05/25/16	XPL	n/a	n/a	GGH5300
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	120	84	ug/kg	
78-83-1	Isobutyl Alcohol	ND	120	71	ug/kg	
67-63-0	Isopropyl Alcohol	ND	120	69	ug/kg	
71-23-8	n-Propyl Alcohol	ND	120	49	ug/kg	
71-36-3	n-Butyl Alcohol	ND	120	66	ug/kg	
78-92-2	sec-Butyl Alcohol	ND	120	65	ug/kg	
67-56-1	Methanol	ND	240	58	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	86%		52-141%
111-27-3	Hexanol	88%		52-141%

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SGS Accutest

Report of Analysis

Client Sample ID:	RA8-GWD		
Lab Sample ID:	JC20934-5	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P26387.D	1	05/26/16	JJ	05/25/16	OP94258	E6P1228
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	0.90	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.5	0.98	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.5	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.5	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.98	ug/l	
	3&4-Methylphenol	ND	2.2	0.97	ug/l	
88-75-5	2-Nitrophenol	ND	5.5	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	5.5	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.43	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.5	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.5	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.5	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.49	ug/l	
100-52-7	Benzaldehyde	ND	5.5	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.5	0.37	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA8-GWD		
Lab Sample ID:	JC20934-5	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	5.0	2.2	0.71	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
123-91-1	1,4-Dioxane	13.0	1.1	0.72	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.5	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.54	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.5	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.5	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.5	0.48	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.5	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	47%		14-88%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA8-GWD		
Lab Sample ID:	JC20934-5	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-62-2	Phenol-d5	34%		10-110%
118-79-6	2,4,6-Tribromophenol	81%		39-149%
4165-60-0	Nitrobenzene-d5	76%		32-128%
321-60-8	2-Fluorobiphenyl	84%		35-119%
1718-51-0	Terphenyl-d14	80%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4P16435.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8-GWD		
Lab Sample ID:	JC20934-5	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P16435.D	1	05/26/16	LK	05/25/16	OP94258A	E4P872
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.11	0.032	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	97%		24-125%
321-60-8	2-Fluorobiphenyl	86%		19-127%
1718-51-0	Terphenyl-d14	97%		10-119%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GH105224.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8-GWD		
Lab Sample ID:	JC20934-5	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH105224.D	1	05/26/16	XPL	n/a	n/a	GGH5301
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	88%		56-145%
111-27-3	Hexanol	98%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS Accutest

Report of Analysis

Client Sample ID:	RA8-GWS		
Lab Sample ID:	JC20934-6	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P26388.D	1	05/26/16	JJ	05/25/16	OP94258	E6P1228
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

ABN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
95-57-8	2-Chlorophenol	ND	5.5	0.90	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	5.5	0.98	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.2	1.4	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.5	2.7	ug/l	
51-28-5	2,4-Dinitrophenol	ND	11	1.7	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.5	1.4	ug/l	
95-48-7	2-Methylphenol	ND	2.2	0.98	ug/l	
	3&4-Methylphenol	ND	2.2	0.97	ug/l	
88-75-5	2-Nitrophenol	ND	5.5	1.1	ug/l	
100-02-7	4-Nitrophenol	ND	11	1.3	ug/l	
87-86-5	Pentachlorophenol	ND	5.5	1.5	ug/l	
108-95-2	Phenol	ND	2.2	0.43	ug/l	
58-90-2	2,3,4,6-Tetrachlorophenol	ND	5.5	1.6	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	5.5	1.5	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	5.5	1.0	ug/l	
83-32-9	Acenaphthene	ND	1.1	0.21	ug/l	
208-96-8	Acenaphthylene	ND	1.1	0.15	ug/l	
98-86-2	Acetophenone	ND	2.2	0.23	ug/l	
120-12-7	Anthracene	ND	1.1	0.23	ug/l	
1912-24-9	Atrazine	ND	2.2	0.49	ug/l	
100-52-7	Benzaldehyde	ND	5.5	0.32	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.1	0.22	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.1	0.23	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.1	0.23	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.1	0.37	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.1	0.23	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.2	0.44	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.2	0.50	ug/l	
92-52-4	1,1'-Biphenyl	ND	1.1	0.23	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.2	0.26	ug/l	
106-47-8	4-Chloroaniline	ND	5.5	0.37	ug/l	
86-74-8	Carbazole	ND	1.1	0.25	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA8-GWS		
Lab Sample ID:	JC20934-6	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

AHN TCL Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
105-60-2	Caprolactam	ND	2.2	0.71	ug/l	
218-01-9	Chrysene	ND	1.1	0.19	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.2	0.31	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.2	0.27	ug/l	
108-60-1	bis(2-Chloroisopropyl)ether	ND	2.2	0.44	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.2	0.40	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.1	0.61	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.1	0.52	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.2	0.56	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.1	0.36	ug/l	
132-64-9	Dibenzofuran	ND	5.5	0.24	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.2	0.55	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.2	0.26	ug/l	
84-66-2	Diethyl phthalate	ND	2.2	0.29	ug/l	
131-11-3	Dimethyl phthalate	ND	2.2	0.24	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	1.8	ug/l	
206-44-0	Fluoranthene	ND	1.1	0.19	ug/l	
86-73-7	Fluorene	ND	1.1	0.19	ug/l	
118-74-1	Hexachlorobenzene	ND	1.1	0.36	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.1	0.54	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	11	3.1	ug/l	
67-72-1	Hexachloroethane	ND	2.2	0.43	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.1	0.36	ug/l	
78-59-1	Isophorone	ND	2.2	0.30	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	0.29	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	0.23	ug/l	
88-74-4	2-Nitroaniline	ND	5.5	0.30	ug/l	
99-09-2	3-Nitroaniline	ND	5.5	0.43	ug/l	
100-01-6	4-Nitroaniline	ND	5.5	0.48	ug/l	
98-95-3	Nitrobenzene	ND	2.2	0.71	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.2	0.53	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.5	0.24	ug/l	
85-01-8	Phenanthrene	ND	1.1	0.19	ug/l	
129-00-0	Pyrene	ND	1.1	0.24	ug/l	
95-94-3	1,2,4,5-Tetrachlorobenzene	ND	2.2	0.41	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		14-88%
4165-62-2	Phenol-d5	29%		10-110%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	RA8-GWS		
Lab Sample ID:	JC20934-6	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

ABN TCL Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
118-79-6	2,4,6-Tribromophenol	71%		39-149%
4165-60-0	Nitrobenzene-d5	67%		32-128%
321-60-8	2-Fluorobiphenyl	72%		35-119%
1718-51-0	Terphenyl-d14	81%		10-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: 4P16436.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8-GWS		
Lab Sample ID:	JC20934-6	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846 8270D BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P16436.D	1	05/26/16	LK	05/25/16	OP94258A	E4P872
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
91-20-3	Naphthalene	ND	0.11	0.032	ug/l	
123-91-1	1,4-Dioxane	2.80	0.11	0.054	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	86%		24-125%
321-60-8	2-Fluorobiphenyl	81%		19-127%
1718-51-0	Terphenyl-d14	101%		10-119%

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ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Raw Data: GH105225.D

SGS Accutest

Report of Analysis

Client Sample ID:	RA8-GWS		
Lab Sample ID:	JC20934-6	**Date Sampled:**	05/24/16
Matrix:	AQ - Ground Water	**Date Received:**	05/25/16
Method:	SW846-8015C (DAI)	**Percent Solids:**	n/a
Project:	BMSMC, Building 5 Area, PR		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GH105225.D	1	05/26/16	XPL	n/a	n/a	GGH5301
Run #2							

Low Molecular Alcohol List

CAS No.	Compound	Result	RL	MDL	Units	Q
64-17-5	Ethanol	ND	100	55	ug/l	
78-83-1	Isobutyl Alcohol	ND	100	36	ug/l	
67-63-0	Isopropyl Alcohol	ND	100	68	ug/l	
71-23-8	n-Propyl Alcohol	ND	100	43	ug/l	
71-36-3	n-Butyl Alcohol	ND	100	87	ug/l	
78-92-2	sec-Butyl Alcohol	ND	100	66	ug/l	
67-56-1	Methanol	ND	200	71	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
111-27-3	Hexanol	74%		56-145%
111-27-3	Hexanol	99%		56-145%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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PAGE 1 OF 1

JC20934

Client / Reporting Information

Company Name: Anderson Multiland Assoc. Inc.
Street Address: 2700 Westchester
City: Purchase State: NY Zip:
Project Contact: Terry Taylor E-mail:
Phone #: 914-251-0400 Fax #:
Sampler(s) Name(s): T. Taylor, R. Stuart, D. Linstrom

Project Information

Project Name: BMS Release Assessment
Street:
City: Humacao State: PR
Project #:
Client Purchase Order #:
Project Manager:

Billing Information (If different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Requested Analysis

#	Field ID / Point of Collection	MEOH Vial #	Date Collected	Time Collected	Sampled by	Matrix	# of bottles	HCl	TriPh	H2SO4	NONE	DI Water	MEOH	ENCORE	SVOC - Method 8270D	LMA - Method 8015B	Pesticides - Method 8081B 1,4 Dioxane + Naphthalene by Method 8270D SIM	Matrix Codes	LAB USE ONLY
1	RA4-GWS		05/23/16	1545	TT	GW	5	3			2				X	X	X		E55
2	RA8 (5-6)		05/24/16	1015	TT	SO	2				2				X	X	X		V210
3	RA8D (5-6)		05/24/16	1015	TT	SO	2				2				X	X	X		
4	MW21 (7-8)		05/24/16	1130	TT	SO	2				2				X	X	X		F53
5	RA8-GWD		05/24/16	1235	TT	GW	5	3			2				X	X	X		
6	RA8-GWS		05/24/16	1440	TT	GW	5	3			2				X	X	X		

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SD - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

INITIAL ASSESSMENT BP 2A
LABEL VERIFICATION

Turnaround Time (Business days)

- [X] Std. 10 Business Days — For soil samples
- [ ] 5 Day RUSH
- [ ] 3 Day RUSH
- [ ] 2 Day RUSH
- [X] 1 Day RUSH — For aqueous samples
- [ ] other

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULLT1 (Level 3+4)
- [ ] NJ Reduced
- [ ] Commercial "C"
- [ ] NJ Data of Known Quality Protocol Reporting
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only, Commercial "B" = Results + QC Summary
NJ Reduced = Results + QC Summary + Partial Raw data

Comments / Special Instructions

Add to Report: 1-methyl Naphthalene with SVOC Method 8270D

Sample inventory is verified upon receipt in the Laboratory

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By	Date Time	Received By
1	[signature]	05/24/16 1700	1 Fed Ex
2			2 FED EX
3			3
4			4
5			5

Date Time: 5-25-16 1005 — Received By: 2 BP

Cooler Temp: 4.1° IP

Custody Seal #: 347 — Intact — Preserved where applicable — On Ice

5.1 5

JC20934: Chain of Custody
Page 1 of 3

EXECUTIVE NARRATIVE

SDG No:	JC20934	Laboratory:	Accutest, New Jersey
Analysis:	SW846-8270D	Number of Samples:	6
Location:	BMSMC, Building 5 Area Humacao, PR		

SUMMARY: Six (6) samples were analyzed for the ABN TCL list following method SW846-8270D; Naphthalene and 1,4-Dioxane were also analyzed by SW846-8270D using the selective ion monitoring (SIM) technique. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: EPA Hazardous Waste Support Section, SOP HW-35A, July 2015 –Revision 0. *Semivolatile Data Validation*. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues: **None**
Major: **None**
Minor: **None**

Critical findings: **None**
Major findings: **None**
Minor findings:

1. Initial and continuing calibration verifications meet the required criteria. Analytes not meeting the method % difference criteria meet the guidance document performance criteria for continuing calibration verification of ± 25 or 40 %, no action taken.

Butylbenzyl phthalate and 2-nitroaniline did not meet the % difference continuing calibration criteria. Results for this analyte qualified (UJ) in samples JC20934-2; -3; -4.

No closing calibration verification included in data package. No action taken, professional judgment.

2. MS/MSD RPD results outside the upper control limits for several analytes but within guidance document acceptable criteria (< 50 % RPD). No action taken, professional judgment.

MS/MSD % recoveries outside the lower control limits for 1,4-dioxane in sample JC20934-2MS/MSD. Non-detects are rejected (R).

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888

Signature: Rafael Infante
Date: June 18, 2016

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC20934-1
Sample location: BMSMC Building 5 Area
Sampling date: 5/23/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.6	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.6	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.6	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.6	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.6	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	5.6	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.6	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.6	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.6	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.6	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	4.8	ug/l	1	J	UJ	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes

bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
1,4-Dioxane	49.6	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.6	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.6	ug/l	1	-	U	Yes
3-Nitroaniline	5.6	ug/l	1	-	U	Yes
4-Nitroaniline	5.6	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.6	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Naphthalene	0.150	ug/l	1	-	U	Yes

Sample ID: JC20934-2
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	79	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	200	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	200	ug/kg	1	-	U	Yes
2,4-Dimethylphenol	200	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	200	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	200	ug/kg	1	-	UJ	Yes
2-Methylphenol	79	ug/kg	1	-	U	Yes
3&4-Methylphenol	79	ug/kg	1	-	U	Yes
2-Nitrophenol	200	ug/kg	1	-	U	Yes
4-Nitrophenol	390	ug/kg	1	-	U	Yes
Pentachlorophenol	200	ug/kg	1	-	U	Yes
Phenol	79	ug/kg	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	200	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	200	ug/kg	1	-	U	Yes
2,4,6-Trichlorophenol	200	ug/kg	1	-	U	Yes
Acenaphthene	39	ug/kg	1	-	U	Yes
Acenaphthylene	39	ug/kg	1	-	U	Yes
Acetophenone	200	ug/kg	1	-	U	Yes
Anthracene	39	ug/kg	1	-	U	Yes
Atrazine	79	ug/kg	1	-	U	Yes
Benzo(a)anthracene	39	ug/kg	1	-	U	Yes
Benzo(a)pyrene	39	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	39	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	39	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	39	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	79	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	79	ug/kg	1	-	UJ	Yes
1,1'-Biphenyl	79	ug/kg	1	-	U	Yes
Benzaldehyde	200	ug/kg	1	-	U	Yes
2-Chloronaphthalene	79	ug/kg	1	-	U	Yes
4-Chloroaniline	200	ug/kg	1	-	U	Yes
Carbazole	79	ug/kg	1	-	U	Yes
Caprolactam	79	ug/kg	1	-	U	Yes
Chrysene	39	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	79	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	79	ug/kg	1	-	U	Yes
bis(2-Chloroisopropyl)ether	79	ug/kg	1	-	U	Yes

4-Chlorophenyl phenyl ether	79	ug/kg	1	-	U	Yes
2,4-Dinitrotoluene	39	ug/kg	1	-	U	Yes
2,6-Dinitrotoluene	39	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	79	ug/kg	1	-	U	Yes
Dibenzo(a,h)anthracene	39	ug/kg	1	-	U	Yes
Dibenzofuran	79	ug/kg	1	-	U	Yes
Di-n-butyl phthalate	79	ug/kg	1	-	U	Yes
Di-n-octyl phthalate	79	ug/kg	1	-	U	Yes
Diethyl phthalate	79	ug/kg	1	-	U	Yes
Dimethyl phthalate	79	ug/kg	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	79	ug/kg	1	-	U	Yes
Fluoranthene	39	ug/kg	1	-	U	Yes
Fluorene	39	ug/kg	1	-	U	Yes
Hexachlorobenzene	79	ug/kg	1	-	U	Yes
Hexachlorobutadiene	39	ug/kg	1	-	U	Yes
Hexachlorocyclopentadiene	390	ug/kg	1	-	U	Yes
Hexachloroethane	200	ug/kg	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	39	ug/kg	1	-	U	Yes
Isophorone	79	ug/kg	1	-	U	Yes
1-Methylnaphthalene	79	ug/kg	1	-	U	Yes
2-Methylnaphthalene	79	ug/kg	1	-	U	Yes
2-Nitroaniline	200	ug/kg	1	-	UJ	Yes
3-Nitroaniline	200	ug/kg	1	-	U	Yes
4-Nitroaniline	200	ug/kg	1	-	U	Yes
Nitrobenzene	79	ug/kg	1	-	U	Yes
N-Nitroso-di-n-propylamine	79	ug/kg	1	-	U	Yes
Nitrosodiphenylamine	200	ug/kg	1	-	U	Yes
Phenanthrene	39	ug/kg	1	-	U	Yes
Pyrene	39	ug/kg	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	200	ug/kg	1	-	U	Yes

METHOD: 8270D (SIM)

Naphthalene	3.9	ug/kg	1	-	U	Yes
1,4-Dioxane	3.9	ug/kg	1	-	R	Yes

Sample ID: JC20934-3
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	78	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	190	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	190	ug/kg	1	-	U	Yes
2,4-Dimethylphenol	190	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	190	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	190	ug/kg	1	-	UJ	Yes
2-Methylphenol	78	ug/kg	1	-	U	Yes
3&4-Methylphenol	78	ug/kg	1	-	U	Yes
2-Nitrophenol	190	ug/kg	1	-	U	Yes
4-Nitrophenol	390	ug/kg	1	-	U	Yes
Pentachlorophenol	190	ug/kg	1	-	U	Yes
Phenol	78	ug/kg	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	190	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	190	ug/kg	1	-	U	Yes
2,4,6-Trichlorophenol	190	ug/kg	1	-	U	Yes
Acenaphthene	39	ug/kg	1	-	U	Yes
Acenaphthylene	39	ug/kg	1	-	U	Yes
Acetophenone	190	ug/kg	1	-	U	Yes
Anthracene	39	ug/kg	1	-	U	Yes
Atrazine	78	ug/kg	1	-	U	Yes
Benzo(a)anthracene	39	ug/kg	1	-	U	Yes
Benzo(a)pyrene	39	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	39	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	39	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	39	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	78	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	78	ug/kg	1	-	UJ	Yes
1,1'-Biphenyl	78	ug/kg	1	-	U	Yes
Benzaldehyde	190	ug/kg	1	-	U	Yes
2-Chloronaphthalene	78	ug/kg	1	-	U	Yes
4-Chloroaniline	190	ug/kg	1	-	U	Yes
Carbazole	78	ug/kg	1	-	U	Yes
Caprolactam	78	ug/kg	1	-	U	Yes
Chrysene	39	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	78	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	78	ug/kg	1	-	U	Yes
bis(2-Chloroisopropyl)ether	78	ug/kg	1	-	U	Yes

4-Chlorophenyl phenyl ether	78	ug/kg	1	-	U	Yes
2,4-Dinitrotoluene	39	ug/kg	1	-	U	Yes
2,6-Dinitrotoluene	39	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	78	ug/kg	1	-	U	Yes
Dibenzo(a,h)anthracene	39	ug/kg	1	-	U	Yes
Dibenzofuran	78	ug/kg	1	-	U	Yes
Di-n-butyl phthalate	78	ug/kg	1	-	U	Yes
Di-n-octyl phthalate	78	ug/kg	1	-	U	Yes
Diethyl phthalate	78	ug/kg	1	-	U	Yes
Dimethyl phthalate	78	ug/kg	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	78	ug/kg	1	-	U	Yes
Fluoranthene	39	ug/kg	1	-	U	Yes
Fluorene	39	ug/kg	1	-	U	Yes
Hexachlorobenzene	78	ug/kg	1	-	U	Yes
Hexachlorobutadiene	39	ug/kg	1	-	U	Yes
Hexachlorocyclopentadiene	390	ug/kg	1	-	U	Yes
Hexachloroethane	190	ug/kg	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	39	ug/kg	1	-	U	Yes
Isophorone	78	ug/kg	1	-	U	Yes
1-Methylnaphthalene	78	ug/kg	1	-	U	Yes
2-Methylnaphthalene	78	ug/kg	1	-	U	Yes
2-Nitroaniline	190	ug/kg	1	-	UJ	Yes
3-Nitroaniline	190	ug/kg	1	-	U	Yes
4-Nitroaniline	190	ug/kg	1	-	U	Yes
Nitrobenzene	78	ug/kg	1	-	U	Yes
N-Nitroso-di-n-propylamine	78	ug/kg	1	-	U	Yes
Nitrosodiphenylamine	190	ug/kg	1	-	U	Yes
Phenanthrene	39	ug/kg	1	-	U	Yes
Pyrene	39	ug/kg	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	190	ug/kg	1	-	U	Yes

METHOD: 8270D (SIM)

Naphthalene	3.8	ug/kg	1	-	U	Yes
1,4-Dioxane	3.8	ug/kg	1	-	U	Yes

Sample ID: JC20934-4
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Soil

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	78	ug/kg	1	-	U	Yes
4-Chloro-3-methyl phenol	190	ug/kg	1	-	U	Yes
2,4-Dichlorophenol	190	ug/kg	1	-	U	Yes
2,4-Dimethylphenol	190	ug/kg	1	-	U	Yes
2,4-Dinitrophenol	190	ug/kg	1	-	U	Yes
4,6-Dinitro-o-cresol	190	ug/kg	1	-	U	Yes
2-Methylphenol	78	ug/kg	1	-	U	Yes
3&4-Methylphenol	78	ug/kg	1	-	U	Yes
2-Nitrophenol	190	ug/kg	1	-	U	Yes
4-Nitrophenol	390	ug/kg	1	-	U	Yes
Pentachlorophenol	190	ug/kg	1	-	U	Yes
Phenol	78	ug/kg	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	190	ug/kg	1	-	U	Yes
2,4,5-Trichlorophenol	190	ug/kg	1	-	U	Yes
2,4,6-Trichlorophenol	190	ug/kg	1	-	U	Yes
Acenaphthene	39	ug/kg	1	-	U	Yes
Acenaphthylene	39	ug/kg	1	-	U	Yes
Acetophenone	190	ug/kg	1	-	U	Yes
Anthracene	39	ug/kg	1	-	U	Yes
Atrazine	78	ug/kg	1	-	U	Yes
Benzo(a)anthracene	39	ug/kg	1	-	U	Yes
Benzo(a)pyrene	39	ug/kg	1	-	U	Yes
Benzo(b)fluoranthene	39	ug/kg	1	-	U	Yes
Benzo(g,h,i)perylene	39	ug/kg	1	-	U	Yes
Benzo(k)fluoranthene	39	ug/kg	1	-	U	Yes
4-Bromophenyl phenyl ether	78	ug/kg	1	-	U	Yes
Butyl benzyl phthalate	78	ug/kg	1	-	UJ	Yes
1,1'-Biphenyl	78	ug/kg	1	-	U	Yes
Benzaldehyde	190	ug/kg	1	-	U	Yes
2-Chloronaphthalene	78	ug/kg	1	-	U	Yes
4-Chloroaniline	190	ug/kg	1	-	U	Yes
Carbazole	78	ug/kg	1	-	U	Yes
Caprolactam	78	ug/kg	1	-	U	Yes
Chrysene	39	ug/kg	1	-	U	Yes
bis(2-Chloroethoxy)methane	78	ug/kg	1	-	U	Yes
bis(2-Chloroethyl)ether	78	ug/kg	1	-	U	Yes
bis(2-Chloroisopropyl)ether	78	ug/kg	1	-	U	Yes

4-Chlorophenyl phenyl ether	78	ug/kg	1	-	U	Yes
2,4-Dinitrotoluene	39	ug/kg	1	-	U	Yes
2,6-Dinitrotoluene	39	ug/kg	1	-	U	Yes
3,3'-Dichlorobenzidine	78	ug/kg	1	-	U	Yes
Dibenzo(a,h)anthracene	39	ug/kg	1	-	U	Yes
Dibenzofuran	78	ug/kg	1	-	U	Yes
Di-n-butyl phthalate	78	ug/kg	1	-	U	Yes
Di-n-octyl phthalate	78	ug/kg	1	-	U	Yes
Diethyl phthalate	78	ug/kg	1	-	U	Yes
Dimethyl phthalate	78	ug/kg	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	78	ug/kg	1	-	U	Yes
Fluoranthene	39	ug/kg	1	-	U	Yes
Fluorene	39	ug/kg	1	-	U	Yes
Hexachlorobenzene	78	ug/kg	1	-	U	Yes
Hexachlorobutadiene	39	ug/kg	1	-	U	Yes
Hexachlorocyclopentadiene	390	ug/kg	1	-	U	Yes
Hexachloroethane	190	ug/kg	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	39	ug/kg	1	-	U	Yes
Isophorone	78	ug/kg	1	-	U	Yes
1-Methylnaphthalene	78	ug/kg	1	-	U	Yes
2-Methylnaphthalene	78	ug/kg	1	-	U	Yes
2-Nitroaniline	190	ug/kg	1	-	UJ	Yes
3-Nitroaniline	190	ug/kg	1	-	U	Yes
4-Nitroaniline	190	ug/kg	1	-	U	Yes
Nitrobenzene	78	ug/kg	1	-	U	Yes
N-Nitroso-di-n-propylamine	78	ug/kg	1	-	U	Yes
Nitrosodiphenylamine	190	ug/kg	1	-	U	Yes
Phenanthrene	39	ug/kg	1	-	U	Yes
Pyrene	39	ug/kg	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	190	ug/kg	1	-	U	Yes
METHOD: 8270D (SIM)						
Naphthalene	3.9	ug/kg	1	-	U	Yes
1,4-Dioxane	3.9	ug/kg	1	-	U	Yes

Sample ID: JC20934-5
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.5	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.5	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.5	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.5	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.5	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	5.5	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.5	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.5	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.5	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.5	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	4.8	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	5.0	ug/l	1	-	-	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes
4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes

2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
1,4-Dioxane	13.0	ug/l	1	-	-	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.5	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.5	ug/l	1	-	U	Yes
3-Nitroaniline	5.5	ug/l	1	-	U	Yes
4-Nitroaniline	5.5	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.5	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Naphthalene	0.11	ug/l	1	-	U	Yes

Sample ID: JC20934-6
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Groundwater

METHOD: 8270D

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
2-Chlorophenol	5.5	ug/l	1	-	U	Yes
4-Chloro-3-methyl phenol	5.5	ug/l	1	-	U	Yes
2,4-Dichlorophenol	2.2	ug/l	1	-	U	Yes
2,4-Dimethylphenol	5.5	ug/l	1	-	U	Yes
2,4-Dinitrophenol	11	ug/l	1	-	U	Yes
4,6-Dinitro-o-cresol	5.5	ug/l	1	-	U	Yes
2-Methylphenol	2.2	ug/l	1	-	U	Yes
3&4-Methylphenol	2.2	ug/l	1	-	U	Yes
2-Nitrophenol	5.5	ug/l	1	-	U	Yes
4-Nitrophenol	11	ug/l	1	-	U	Yes
Pentachlorophenol	5.5	ug/l	1	-	U	Yes
Phenol	2.2	ug/l	1	-	U	Yes
2,3,4,6-Tetrachlorophenol	5.5	ug/l	1	-	U	Yes
2,4,5-Trichlorophenol	5.5	ug/l	1	-	U	Yes
2,4,6-Trichlorophenol	5.5	ug/l	1	-	U	Yes
Acenaphthene	1.1	ug/l	1	-	U	Yes
Acenaphthylene	1.1	ug/l	1	-	U	Yes
Acetophenone	2.2	ug/l	1	-	U	Yes
Anthracene	1.1	ug/l	1	-	U	Yes
Atrazine	2.2	ug/l	1	-	U	Yes
Benzaldehyde	5.5	ug/l	1	-	U	Yes
Benzo(a)anthracene	1.1	ug/l	1	-	U	Yes
Benzo(a)pyrene	1.1	ug/l	1	-	U	Yes
Benzo(b)fluoranthene	1.1	ug/l	1	-	U	Yes
Benzo(g,h,i)perylene	1.1	ug/l	1	-	U	Yes
Benzo(k)fluoranthene	1.1	ug/l	1	-	U	Yes
4-Bromophenyl phenyl ether	1.1	ug/l	1	-	U	Yes
Butyl benzyl phthalate	2.2	ug/l	1	-	U	Yes
1,1'-Biphenyl	1.1	ug/l	1	-	U	Yes
2-Chloronaphthalene	2.2	ug/l	1	-	U	Yes
4-Chloroaniline	4.8	ug/l	1	-	U	Yes
Carbazole	1.1	ug/l	1	-	U	Yes
Caprolactam	2.2	ug/l	1	-	U	Yes
Chrysene	1.1	ug/l	1	-	U	Yes
bis(2-Chloroethoxy)methane	2.2	ug/l	1	-	U	Yes
bis(2-Chloroethyl)ether	2.2	ug/l	1	-	U	Yes
bis(2-Chloroisopropyl)ether	2.2	ug/l	1	-	U	Yes

4-Chlorophenyl phenyl ether	2.2	ug/l	1	-	U	Yes
2,4-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
2,6-Dinitrotoluene	1.1	ug/l	1	-	U	Yes
3,3'-Dichlorobenzidine	2.2	ug/l	1	-	U	Yes
Dibenzo(a,h)anthracene	1.1	ug/l	1	-	U	Yes
Dibenzofuran	5.5	ug/l	1	-	U	Yes
Di-n-butyl phthalate	2.2	ug/l	1	-	U	Yes
Di-n-octyl phthalate	2.2	ug/l	1	-	U	Yes
Diethyl phthalate	2.2	ug/l	1	-	U	Yes
Dimethyl phthalate	2.2	ug/l	1	-	U	Yes
bis(2-Ethylhexyl)phthalate	2.2	ug/l	1	-	U	Yes
Fluoranthene	1.1	ug/l	1	-	U	Yes
Fluorene	1.1	ug/l	1	-	U	Yes
Hexachlorobenzene	1.1	ug/l	1	-	U	Yes
Hexachlorobutadiene	1.1	ug/l	1	-	U	Yes
Hexachlorocyclopentadiene	11	ug/l	1	-	U	Yes
Hexachloroethane	2.2	ug/l	1	-	U	Yes
Indeno(1,2,3-cd)pyrene	1.1	ug/l	1	-	U	Yes
Isophorone	2.2	ug/l	1	-	U	Yes
1-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Methylnaphthalene	1.1	ug/l	1	-	U	Yes
2-Nitroaniline	5.5	ug/l	1	-	U	Yes
3-Nitroaniline	5.5	ug/l	1	-	U	Yes
4-Nitroaniline	5.5	ug/l	1	-	U	Yes
Nitrobenzene	2.2	ug/l	1	-	U	Yes
N-Nitroso-di-n-propylamine	2.2	ug/l	1	-	U	Yes
Nitrosodiphenylamine	5.5	ug/l	1	-	U	Yes
Phenanthrene	1.1	ug/l	1	-	U	Yes
Pyrene	1.1	ug/l	1	-	U	Yes
1,2,4,5-Tetrachlorobenzene	2.2	ug/l	1	-	U	Yes
METHOD: 8270D (SIM)						
Naphthalene	0.11	ug/l	1	-	U	Yes
1,4-Dioxane	2.80	ug/l	1	-	-	Yes

DATA REVIEW WORKSHEETS

Project Number:_JC20934_____
Date:_____May_23-24,_2016_____
Shipping Date:__May_24,_2016_____
EPA Region:_____2_____

REVIEW OF SEMIVOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: EPA Hazardous Waste Support Section, SOP HW-35A, July 2015 –Revision 0. *Semivolatile Data Validation*. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _Accutest_____ data package received has been reviewed and the quality control and performance data summarized. The data review for SVOCs included:

Lab. Project/SDG No.: ____JC20934_____ Sample matrix: _Soil/Groundwater__
No. of Samples: ___6_Full_scan/6_SIM_____

Trip blank No.: _____-_____
Field blank No.: _____-_____
Equipment blank No.:_____-_____
Field duplicate No.:_____ JC20934-2/-3_____

___X___ Data Completeness
___X___ Holding Times
___X___ GC/MS Tuning
___X___ Internal Standard Performance
___X___ Blanks
___X___ Surrogate Recoveries
___X___ Matrix Spike/Matrix Spike Duplicate
___X___ Laboratory Control Spikes
___X___ Field Duplicates
___X___ Calibrations
___X___ Compound Identifications
___X___ Compound Quantitation
___X___ Quantitation Limits

Overall Comments:_ABN_TCL_list_by_method_SW846-8270D;_Naphthalene_and_1,4-Dioxane_
_analyzed_by_method_SW846-8270D_(SIM)_____
_____

Definition of Qualifiers:

J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____
Date:___June_17,_2016_____

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were met __X__
Criteria were not met
and/or see below _____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE EXTRACTED/ANALYZED	pH	ACTION
All samples extracted and analyzed within method recommended holding time. Sample preservation was acceptable.				

Cooler temperature (Criteria: 4 ± 2 °C): _____5°C_____

Actions

Results will be qualified based on the criteria of the following Table:

Table 1. Holding Time Actions for Semivolatile Analyses

Matrix	Preserved	Criteria	Action	
			Detected Associated Compounds	Non-Detected Associated Compounds
Aqueous	No	≤ 7 days (for extraction) ≤ 40 days (for analysis)	Use professional judgment	
	No	> 7 days (for extraction) > 40 days (for analysis)	J	Use professional judgment
	Yes	≤ 7 days (for extraction) ≤ 40 days (for analysis)	No qualification	
	Yes	> 7 days (for extraction) > 40 days (for analysis)	J	UJ
	Yes/No	Grossly Exceeded	J	UJ or R
Non-Aqueous	No	≤ 14 days (for extraction) ≤ 40 days (for analysis)	Use professional judgment	
	No	> 14 days (for extraction) > 40 days (for analysis)	J	Use professional judgment
	Yes	≤ 14 days (for extraction) ≤ 40 days (for analysis)	No qualification	
	Yes	> 14 days (for extraction) > 40 days (for analysis)	J	UJ
	Yes/No	Grossly Exceeded	J	UJ or R

All criteria were met __X__
Criteria were not met see below ____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

_X__ The DFTPP performance results were reviewed and found to be within the specified criteria.

_X__ DFTPP tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

Notes: These requirements do not apply when samples are analyzed by the Selected Ion Monitoring (SIM) technique.

All mass spectrometer conditions must be identical to those used during the sample analysis. Background subtraction actions resulting in spectral distortion are unacceptable

Notes: No data should be qualified based of DFTPP failure.

The requirement to analyze the instrument performance check solution is optional when analysis of PAHs/pentachlorophenol is to be performed by the SIM technique.

List the samples affected:

Actions:

1. If sample are analyzed without a preceding valid instrument performance check or are analyzed 12 hours after the Instrument Performance Check, qualify all data in those samples as unusable (R).
2. If ion abundance criteria are not met, use professional judgment to determine to what extent the data may be utilized.
3. State in the Data Review Narrative, decisions to use analytical data associated with DFTPP instrument performance checks not meeting the contract requirements.
4. Use professional judgment to determine if associated data should be qualified based on the spectrum of the mass calibration compounds.

All criteria were met ___X___
Criteria were not met
and/or see below _____

INITIAL CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:__05/25/16:_05/31/16;_06/06/16_(SIM)____
Instrument ID numbers:_____GCMS4P_____
Matrix/Level:_____Aqueous/low_____

Date of initial calibration:_____05/13/2016_(Scan)_____
Instrument ID numbers:_____GCMS6P_____
Matrix/Level:_____Aqueous/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
Initial and initial calibration verification meets the method and guidance validation document performance criteria.				

Actions:

Qualify the initial calibration analytes listed in Table 2 using the following criteria:

Table 3. Initial Calibration Actions for Semivolatile Analysis

Criteria	Action	
	Detect	Non-detect
Initial Calibration not performed at specified frequency and sequence	Use professional judgment R	Use professional judgment R
Initial Calibration not performed at the specified concentrations	J	UJ
RRF < Minimum RRF in Table 2 for target analyte	Use professional judgment J+ or R	R
RRF ≥ Minimum RRF in Table 2 for target analyte	No qualification	No qualification
%RSD > Maximum %RSD in Table 2 for target analyte	J	Use professional judgment
%RSD ≤ Maximum %RSD in Table 2 for target analyte	No qualification	No qualification

Initial Calibration

Table 2. RRF, %RSD, and %D Acceptance Criteria in Initial Calibration and CCV for Semivolatile Analysis

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Opening Maximum %D[1]
1,4-Dioxane	0.010	40.0	-40.0	-50.0
Benzaldehyde	0.100	40.0	-40.0	-50.0
Phenol	0.080	20.0	-20.0	-25.0
Bis(2-chloroethyl)ether	0.100	20.0	-20.0	-25.0
2-Chlorophenol	0.200	20.0	-20.0	-25.0
2-Methylphenol	0.010	20.0	-20.0	-25.0
3-Methylphenol	0.010	20.0	-20.0	-25.0
2,2'-Oxybis-(1-chloropropane)	0.010	20.0	-25.0	-50.0
Acetophenone	0.060	20.0	-20.0	-25.0
4-Methylphenol	0.010	20.0	-20.0	-25.0
N-Nitroso-di-n-propylamine	0.080	20.0	-25.0	-25.0
Hexachloroethane	0.100	20.0	-20.0	-25.0
Nitrobenzene	0.090	20.0	-20.0	-25.0
Isophorone	0.100	20.0	-20.0	-25.0
2-Nitrophenol	0.060	20.0	-20.0	-25.0
2,4-Dimethylphenol	0.050	20.0	-25.0	-50.0
Bis(2-chloroethoxy)methane	0.080	20.0	-20.0	-25.0
2,4-Dichlorophenol	0.060	20.0	-20.0	-25.0
Naphthalene	0.200	20.0	-20.0	-25.0
4-Chloroaniline	0.010	40.0	-40.0	-50.0
Hexachlorobutadiene	0.040	20.0	-20.0	-25.0
Caprolactam	0.010	40.0	-30.0	-50.0
4-Chloro-3-methylphenol	0.040	20.0	-20.0	-25.0
2-Methylnaphthalene	0.100	20.0	-20.0	-25.0
Hexachlorocyclopentadiene	0.010	40.0	-40.0	-50.0
2,4,6-Trichlorophenol	0.090	20.0	-20.0	-25.0
2,4,5-Trichlorophenol	0.100	20.0	-20.0	-25.0
1,1'-Biphenyl	0.200	20.0	-20.0	-25.0

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Opening Maximum %D[1]
2-Chloronaphthalene	0.300	20.0	-20.0	-25.0
2-Nitroaniline	0.060	20.0	-25.0	-25.0
Dimethylphthalate	0.300	20.0	-25.0	-25.0
2,6-Dinitrotoluene	0.080	20.0	-20.0	-25.0
Acenaphthylene	0.400	20.0	-20.0	-25.0
3-Nitroaniline	0.010	20.0	-25.0	-50.0
Acenaphthene	0.200	20.0	-20.0	-25.0
2,4-Dinitrophenol	0.010	40.0	-50.0	-50.0
4-Nitrophenol	0.010	40.0	-40.0	-50.0
Dibenzofuran	0.300	20.0	-20.0	-25.0
2,4-Dinitrotoluene	0.070	20.0	-20.0	-25.0
Diethylphthalate	0.300	20.0	-20.0	-25.0
1,2,4,5-Tetrachlorobenzene	0.100	20.0	-20.0	-25.0
4-Chlorophenyl-phenylether	0.100	20.0	-20.0	-25.0
Fluorene	0.200	20.0	-20.0	-25.0
4-Nitroaniline	0.010	40.0	-40.0	-50.0
4,6-Dinitro-2-methylphenol	0.010	40.0	-30.0	-50.0
4-Bromophenyl-phenyl ether	0.070	20.0	-20.0	-25.0
N-Nitrosodiphenylamine	0.100	20.0	-20.0	-25.0
Hexachlorobenzene	0.050	20.0	-20.0	-25.0
Atrazine	0.010	40.0	-25.0	-50.0
Pentachlorophenol	0.010	40.0	-40.0	-50.0
Phenanthrene	0.200	20.0	-20.0	-25.0
Anthracene	0.200	20.0	-20.0	-25.0
Carbazole	0.050	20.0	-20.0	-25.0
Di-n-butylphthalate	0.500	20.0	-20.0	-25.0
Fluoranthene	0.100	20.0	-20.0	-25.0
Pyrene	0.400	20.0	-25.0	-50.0
Butylbenzylphthalate	0.100	20.0	-25.0	-50.0

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Opening Maximum %D[1]
3,3'-Dichlorobenzidine	0.010	40.0	- 40.0	- 50.0
Benzo(a)anthracene	0.300	20.0	- 20.0	- 25.0
Chrysene	0.200	20.0	- 20.0	- 50.0
Bis(2-ethylhexyl) phthalate	0.200	20.0	- 25.0	- 50.0
Di-n-octylphthalate	0.010	40.0	- 40.0	- 50.0
Benzo(b)fluoranthene	0.010	20.0	- 25.0	- 50.0
Benzo(k)fluoranthene	0.010	20.0	- 25.0	- 50.0
Benzo(a)pyrene	0.010	20.0	- 20.0	- 50.0
Indeno(1,2,3-cd)pyrene	0.010	20.0	- 25.0	- 50.0
Dibenzo(a,h)anthracene	0.010	20.0	- 25.0	- 50.0
Benzo(g,h,i)perylene	0.010	20.0	- 30.0	- 50.0
2,3,4,6-Tetrachlorophenol	0.040	20.0	- 20.0	- 50.0
Naphthalene	0.600	20.0	- 25.0	- 25.0
2-Methylnaphthalene	0.300	20.0	- 20.0	- 25.0
Acenaphthylene	0.900	20.0	- 20.0	- 25.0
Acenaphthene	0.500	20.0	- 20.0	- 25.0
Fluorene	0.700	20.0	- 25.0	- 50.0
Phenanthrene	0.300	20.0	- 25.0	- 50.0
Anthracene	0.400	20.0	- 25.0	- 50.0
Fluoranthene	0.400	20.0	- 25.0	- 50.0
Pyrene	0.500	20.0	- 30.0	- 50.0
Benzo(a)anthracene	0.400	20.0	- 25.0	- 50.0
Chrysene	0.400	20.0	- 25.0	- 50.0
Benzo(b)fluoranthene	0.100	20.0	- 30.0	- 50.0
Benzo(k)fluoranthene	0.100	20.0	- 30.0	- 50.0
Benzo(a)pyrene	0.100	20.0	- 25.0	- 50.0
Indeno(1,2,3-cd)pyrene	0.100	20.0	- 40.0	- 50.0
Dibenzo(a,h)anthracene	0.010	25.0	- 40.0	- 50.0
Benzo(g,h,i)perylene	0.020	25.0	- 40.0	- 50.0

Pentachlorophenol	0.010	40.0	± 50.0	± 50.0
Deuterated Monitoring Compounds				

Analyte	Minimum RRF	Maximum %RSD	Opening Maximum %D[1]	Closing Maximum %D
1,4-Dioxane-d_8	0.010	20.0	± 25.0	± 50.0
Phenol-d_5	0.010	20.0	± 25.0	± 25.0
Bis-(2-chloroethyl)ether-d_8	0.100	20.0	± 20.0	± 25.0
2-Chlorophenol-d_4	0.200	20.0	± 20.0	± 25.0
4-Methylphenol-d_8	0.010	20.0	± 20.0	± 25.0
4-Chloroaniline-d_4	0.010	40.0	± 40.0	± 50.0
Nitrobenzene-d_5	0.050	20.0	± 20.0	± 25.0
2-Nitrophenol-d_4	0.050	20.0	± 20.0	± 25.0
2,4-Dichlorophenol-d_3	0.060	20.0	± 20.0	± 25.0
Dimethylphthalate-d_6	0.300	20.0	± 20.0	± 25.0
Acenaphthylene-d_8	0.400	20.0	± 20.0	± 25.0
4-Nitrophenol-d_4	0.010	40.0	± 40.0	± 50.0
Fluorene-d_{10}	0.100	20.0	± 20.0	± 25.0
4,6-Dinitro-2-methylphenol-d_3	0.010	40.0	± 30.0	± 50.0
Anthracene-d_{10}	0.300	20.0	± 20.0	± 25.0
Pyrene-d_{10}	0.300	20.0	± 25.0	± 50.0
Benzo(a)pyrene-d_{12}	0.010	20.0	± 20.0	± 50.0
Fluoranthene-d_{10} (SIM)	0.400	20.0	± 25.0	± 50.0
2-Methylnaphthalene-d_{10} (SIM)	0.300	20.0	± 20.0	± 25.0

[1] If a closing CCV is acting as an opening CCV, all target analytes must meet the requirements for an opening CCV.

Note: If analysis by SIM technique is requested for PAH/pentachlorophenols, calibration standards analyzed at 0.10, 0.20, 0.40, 0.80, and 1.0 ng/uL for each target compound of interest and the associated DMCs. Pentachlorophenol will require only a four point initial calibration at 0.20, 0.40, 0.80, and 1.0 ng/uL.

All criteria were met _____
Criteria were not met
and/or see below __X___

CONTINUING CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:___05/25/16;_05/31/16:_06/06/16_(SIM)_____
Date of initial calibration verification (ICV):_05/25/16;_06/01/16;_06/06/16_____
Date of continuing calibration verification (CCV):_05/26/16;_06/03/16;_06/07/16_
Date of closing CCV:_____-_____
Instrument ID numbers:_____GCMS4P_____
Matrix/Level:_____Aqueous/low_____

Date of initial calibration:____05/13/16_(Scan)_____
Date of initial calibration verification (ICV):____05/13/16;_05/16/16_____
Date of continuing calibration verification (CCV):__05/25/16;_06/02/16_____
Date of closing CCV:_____-_____
Instrument ID numbers:_____GCMS6P_____
Matrix/Level:_____Aqueous/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED
GCMS4P				
06/01/16	icc879-1.0	-32.8	1,4-dixane*	JC20934-2; -3; -4
06/03/16	cc879-1.0	-23.1	1,4-dioxane*	JC20934-2; -3; -4
05/25/16	cc1209-50	-24.4	di-n-octylphthalate*	JC20934-1; -5; -6
06/02/16	cc1209-25	24.4	1,4-dioxane*	JC20934-2; -3; -4
		40.0	Hexachlorocyclopentadiene*	
		-25.7	2-nitroaniline	
		22.6	2,4-dinitrophenol*	
		25.2	Pentachlorophenol*	
		-26.8	Butylbenzylphtahlate	
		-30.7	di-n-octylphthalate*	

Note: Initial and continuing calibration verifications meet the method and guidance document required performance criteria except the cases describe in this document. Analyte results are qualified as (J) or (UJ) in affected samples.

No closing calibration verification included in data package. No action taken, professional judgment.

* Analytes with % difference in the continue calibration verification outside the method performance criteria but within the validation guidelines criteria, +40 %. No action taken.

GCMS instrument GCMSZ used in the scan mode for QC samples. Several analytes missed % difference criteria in the continuing calibration verification. QC samples are not validated.

Actions:

Notes: Verify that the CCV is run at the required frequency (an opening and closing CCV must be run within 12-hour period).

All DMCs must meet the RRF values given in Table 2. No qualification of the data is necessary on DMCs RRF and %RSD/%D alone. Use professional judgment to evaluate DMCs and %RSD/%D data in conjunction with DMCs recoveries to determine the need for qualification of the data.

Qualify the initial calibration analytes listed in Table 2 using the following criteria in the CCVs:

Table 4. CCV Actions for Semivolatile Analysis

Criteria for Opening CCV	Criteria for Closing CCV	Action	
		Detect	Non-detect
CCV not performed at required frequency and sequence	CCV not performed at required frequency	Use professional judgment R	Use professional judgment R
CCV not performed at specified concentration	CCV not performed at specified concentration	Use professional judgment	Use professional judgment
RRF < Minimum RRF in Table 2 for target analyte	RRF < Minimum RRF in Table 2 for target analyte	Use professional judgment J or R	R
RRF > Minimum RRF in Table 2 for target analyte	RRF > Minimum RRF in Table 2 for target analyte	No qualification	No qualification
%D outside the Opening Maximum %D limits in Table 2 for target analyte	%D outside the Closing Maximum %D limits in Table 2 for target analyte	J	UJ
%D within the inclusive Opening Maximum %D limits in Table 2 for target analyte	%D within the inclusive Closing Maximum %D limits in Table 2 for target analyte	No qualification	No qualification

All criteria were met __X___
Criteria were not met
and/or see below _____

BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Notes: The concentration of non-target compounds in all blanks must be less than or equal to 10 ug/L.

The concentration of target compounds in all blanks must be less than its CRQL listed in the method.

Samples taken from a drinking water tap do not have and associated field blank.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_____	_____	_____	_____	_____
_No_target_analytes_detected_in_method_blanks._____				
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
_No_field/trip/equipment_blanks_analyzed_with_this_data_package._____				

All criteria were met __X__
Criteria were not met
and/or see below _____

BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Qualify samples based on the criteria summarized in Table 5:

Table 5. Blank and TCLP/SPLP LEB Actions for Semivolatile Analysis

Blank Type	Blank Result	Sample Result	Action
Method, TCLP/SPLP LEB, Field	Detect	Non-detect	No qualification
	< CRQL	< CRQL	Report at CRQL and qualify as non-detect (U)
		> CRQL	Use professional judgment
	> CRQL	< CRQL	Report at CRQL and qualify as non-detect (U)
		> CRQL but < Blank Result	Report at sample results and qualify as non-detect (U) or as unusable (R)
		> CRQL and > Blank Result	Use professional judgment
	Grossly high	Detect	Report at sample results and qualify as unusable (R)
	TIC > 5.0 ug/L (water) or 0.0050 mg/L (TCLP leachate) or TIC > 170 ug/Kg (soil)	Detect	Use professional judgment

List samples qualified

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met __X__
Criteria were not met
and/or see below ____

SURROGATE SPIKE RECOVERIES – DEUTERATED MONITORING COMPOUNDS (DMCs)

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries – deuterated monitoring compounds. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.

Notes: Recoveries for DMCs in samples and blanks must be within the limits specified in Table 6.

The recovery limits for any of the compounds listed in Table 6 may be expanded at any time during the period of performance if USEPA determines that the limits are too restrictive.

If a DMC is not added in the samples and blanks or the concentrations of DMCs in the samples and blank not the specified, use professional judgment in qualifying the data.

Table 7. DMC Actions for Semivolatile Analysis

Criteria	Action	
	Detect	Non-detect
%R < 10% (excluding DMC's with 10% as a lower acceptance limit)	J-	R
10% < %R (excluding DMC's with 10% as a lower acceptance limit) < Lower Acceptance Limit	J-	UJ
Lower Acceptance limit < %R < Upper Acceptance Limit	No qualification	No qualification
%R > Upper Acceptance Limit	J+	No qualification

List the percent recoveries (%Rs) which do not meet the criteria for DMCs (surrogate) recovery.

Matrix:___Groundwater/Soil_____

SAMPLE ID **SURROGATE COMPOUND** **ACTION**

_____

_DMCs_meet_the_required_criteria._Non-deuterated_surrogates_added_to_the_samples_were__
_within_laboratory_recovery_limits._____

_____

_____

_____

Table 8. Semivolatile DMCs and the Associated Target Analytes

1,4–Dioxane-d_8 (DMC-1)	**Phenol-d_5 (DMC-2)**	**Bis(2-Chloroethyl) ether-d_8 (DMC-3)**
1,4-Dioxane	Benzaldehyde Phenol	Bis(2-chloroethyl)ether 2,2'-Oxybis(1-chloropropane) Bis(2-chloroethoxy)methane
2-Chlorophenol-d_4 (DMC-4)	**4-Methylphenol-d_8 (DMC-5)**	**4-Chloroaniline-d_4 (DMC-6)**
2-Chlorophenol	2-Methylphenol 3-Methylphenol 4-Methylphenol 2,4-Dimethylphenol	4-Chloroaniline Hexachlorocyclopentadiene Dichlorobenzidine
Nitrobenzene-d_5 (DMC-7)	**2-Nitrophenol-d_4 (DMC-8)**	**2,4-Dichlorophenol-d_3 (DMC-9)**
Acetophenone N-Nitroso-di-n-propylamine Hexachloroethane Nitrobenzene 2,6-Dinitrotoluene 2,4-Dinitrotoluene N-Nitrosodiphenylamine	Isophorone 2-Nitrophenol	2,4-Dichlorophenol Hexachlorobutadiene Hexachlorocyclopentadiene 4-Chloro-3-methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 1,2,4,5-Tetrachlorobenzene *Pentachlorophenol 2,3,4,6-Tetrachlorophenol
Dimethylphthalate-d_6 (DMC-10)	**Acenaphthylene-d_8 (DMC-11)**	**4-Nitrophenol-d_4 (DMC-12)**
Caprolactam 1,1'-Biphenyl Dimethylphthalate Diethylphthalate Di-n-butylphthalate Butylbenzylphthalate Bis(2-ethylhexyl) phthalate Di-n-octylphthalate	*Naphthalene *2-Methylnaphthalene 2-Chloronaphthalene *Acenaphthylene *Acenaphthene	2-Nitroaniline 3-Nitroaniline 2,4-Dinitrophenol 4-Nitrophenol 4-Nitroaniline

Fluorene-d_{10} (DMC-13)	**4,6-Dinitro-2-methylphenol-d_2 (DMC-14)**	**Anthracene-d_{10} (DMC-15)**
Dibenzofuran *Fluorene 4-Chlorophenyl-phenylether 4-Bromophenyl-phenylether Carbazole	4,6-Dinitro-2-methylphenol	Hexachlorobenzene Atrazine *Phenanthrene *Anthracene
Pyrene-d_{10} (DMC-16)	**Benzo(a)pyrene-d_{12} (DMC-17)**	
*Fluoranthene *Pyrene *Benzo(a)anthracene *Chrysene	3,3'-Dichlorobenzidine *Benzo(b)fluoranthene *Benzo(k)fluoranthene *Benzo(a)pyrene *Indeno(1,2,3-cd)pyrene *Dibenzo(a,h)anthracene *Benzo(g,h,i)perylene	

*Included in optional Target Analyte List (TAL) of PAHs and PCP only.

Table 9. Semivolatile SIM DMCs and the Associated Target Analytes

Fluoranthene-d10 (DMC-1)	**2-Methylnaphthalene-d10 (DMC-2)**
Fluoranthene	Naphthalene
Pyrene	2-Methylnaphthalene
Benzo(a)anthracene	Acenaphthylene
Chrysene	Acenaphthene
Benzo(b)fluoranthene	Fluorene
Benzo(k)fluoranthene	Pentachlorophenol
Benzo(a)pyrene	Phenanthrene
Indeno(1,2,3-cd)pyrene	Anthracene
Dibenzo(a,h)anthracene	
Benzo(g,h,i)perylene	

All criteria were met _____
Criteria were not met
and/or see below ___X___

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

NOTES: Data for MS and MSDs will not be present unless requested by the Region. Notify the Contract Laboratory COR if a field or trip blank was used for the MS and MSD.

For a Matrix Spike that does not meet criteria, apply the action to only the field sample used to prepare the Matrix Spike sample. If it is clearly stated in the data validation materials that the samples were taken through incremental sampling or some other method guaranteeing the homogeneity of the sample group, then the entire sample group may be qualified.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:__JC20934-5_____ Matrix/Level:__Aqueous_____
Sample ID:__JC20877-3_____ Matrix/Level:__Soil_____
Sample ID:__JC20935-1_(SIM)_____ Matrix/Level:__Aqueous_____
Sample ID:__JC20934-2_(SIM)_____ Matrix/Level:__Soil_____

The QC reported here applies to the following samples: Method: SW846 8270D
JC20934-1, JC20934-5, JC20934-6

Compound	JC20934-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
4-Chloro-3-methyl phenol	ND		110	99.4	90	110	70.2	64	34* a	44-121/18
2,4-Dichlorophenol	ND		110	87.4	80	110	65.5	60	29* a	42-120/19
2,4-Dimethylphenol	ND		110	92.2	84	110	70.7	64	26* a	33-132/23
2-Nitrophenol	ND		110	82.1	75	110	64.6	59	24* a	45-118/20
Pentachlorophenol	ND		110	86.3	79	110	60.4	55	35* a	25-151/25
2,3,4,6-Tetrachlorophenol	ND		110	107	97	110	78.7	72	30* a	44-122/21
2,4,5-Trichlorophenol	ND		110	94.1	86	110	71.5	65	27* a	51-124/20
2,4,6-Trichlorophenol	ND		110	102	93	110	79.2	72	25* a	53-120/21
Acenaphthylene	ND		110	90.0	82	110	71.7	65	23* a	50-101/22
Anthracene	ND		110	102	93	110	75.7	69	30* a	54-117/22

The QC reported here applies to the following samples: Method: SW846 8270D
JC20934-1, JC20934-5, JC20934-6

Compound	JC20934-5 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
Atrazine	ND		110	124	113	110	88.8	81	33* a	42-152/23
Benzo(a)anthracene	ND		110	104	95	110	75.3	69	32* a	40-123/24
Benzo(a)pyrene	ND		110	108	98	110	77.4	70	33* a	41-127/25
Benzo(b)fluoranthene	ND		110	108	98	110	78.5	71	32* a	39-127/27
Benzo(g,h,i)perylene	ND		110	87.6	80	110	60.0	55	37* a	34-128/28
Benzo(k)fluoranthene	ND		110	107	97	110	75.0	68	35* a	39-122/26
4-Bromophenyl phenyl ether	ND		110	100	91	110	73.2	67	31* a	51-124/23
Butyl benzyl phthalate	ND		110	115	105	110	83.5	76	32* a	21-146/28
Carbazole	ND		110	108	98	110	78.0	71	32* a	52-116/22
Chrysene	ND		110	98.6	90	110	73.0	66	30* a	41-128/24
bis(2-Chloroethoxy) methane	ND		110	74.1	67	110	56.8	52	26* a	46-120/24
4-Chlorophenyl phenyl ether	ND		110	95.2	87	110	72.4	66	27* a	48-121/21
2,4-Dinitrotoluene	ND		110	115	105	110	84.7	77	30* a	54-123/27
2,6-Dinitrotoluene	ND		110	112	102	110	82.4	75	30* a	55-125/26
Dibenzo(a,h)anthracene	ND		110	89.5	81	110	62.1	57	36* a	35-130/27
Dibenzofuran	ND		110	97.2	88	110	76.8	70	23* a	53-112/22
Di-n-butyl phthalate	ND		110	107	97	110	76.3	69	33* a	38-129/23
Di-n-octyl phthalate	ND		110	128	116	110	90.7	83	34* a	35-145/26
bis(2-Ethylhexyl) phthalate	ND		110	111	101	110	78.3	71	35* a	34-141/28
Fluoranthene	ND		110	102	93	110	74.8	68	31* a	47-123/24
Fluorene	ND		110	99.3	90	110	76.2	69	26* a	56-117/22
Hexachlorobenzene	ND		110	88.4	80	110	65.7	60	29* a	46-125/24
Hexachlorobutadiene	ND		110	77.8	71	110	58.5	53	28* a	26-121/24
Indeno(1,2,3-cd)pyrene	ND		110	98.4	90	110	66.3	60	39* a	32-130/30
Isophorone	ND		110	81.7	74	110	63.3	58	25* a	47-126/23
1-Methylnaphthalene	ND		110	84.0	76	110	64.8	59	26* a	34-124/25
2-Methylnaphthalene	ND		110	82.1	75	110	63.7	58	25* a	34-123/24
2-Nitroaniline	ND		110	113	103	110	86.0	78	27* a	46-137/23
4-Nitroaniline	ND		110	98.9	90	110	74.2	68	29* a	38-118/25
Nitrobenzene	ND		110	75.5	69	110	58.1	53	26* a	35-130/25
N-Nitrosodiphenylamine	ND		110	108	98	110	78.7	72	31* a	46-123/24
Phenanthrene	ND		110	102	93	110	75.1	68	30* a	48-121/23
Pyrene	ND		110	107	97	110	79.2	72	30* a	43-124/26

Note: No qualifications made JC20934-5 based on RPD results. Professional judgment.

The QC reported here applies to the following samples: Method: SW846 8270D BY SIM
JC20934-2, JC20934-3; JC20934-4

Compound	JC20934-2 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	Spike ug/kg	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
1,4-Dioxane	ND		200	20.7	10* a	196	12.2	6* a	52* a	50-150/30

(a) Outside in house control limits.
* Outside control limit.

Note: 1,4-dioxane not detected in sample JC20934-2. Non-detects are rejected (R).

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).
If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).
If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

A separate worksheet should be used for each MS/MSD pair.

All criteria were met __X__
Criteria were not met
and/or see below ____

INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION

Internal area meets the required criteria of batch samples corresponding to this data package.

Action:

1. If an internal standard area count for a sample or blank is greater than 200.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration) (see Table 10 below):
   a. Qualify detects for compounds quantitated using that internal standard as estimated low (J-).
   b. Do not qualify non-detected associated compounds.
2. If an internal standard area count for a sample or blank is less than 20.0% of the area for the associated standard (opening CCV or mid-point standard from initial calibration):
   a. Qualify detects for compounds quantitated using that internal standard as estimated high (J+).
   b. Qualify non-detected associated compounds as unusable (R).
3. If an internal standard area count for a sample or blank is greater than or equal to 50.0%, and less than or equal to 200% of the area for the associated standard opening CCV or mid-point standard from initial calibration, no qualification of the data is necessary.
4. If an internal standard RT varies by more than 10.0 seconds: Examine the chromatographic profile for that sample to determine if any false positives or negatives exist. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for that sample fraction. Detects should not need to be qualified as unusable (R) if the mass spectral criteria are met.
5. If an internal standard RT varies by less than or equal to 10.0 seconds, no qualification of the data is necessary.

Note: Inform the Contract Laboratory Program Project Officer (CLP PO) if the internal standard performance criteria are grossly exceeded. Note in the Data Review Narrative potential effects on the data resulting from unacceptable internal standard performance.

State in the Data Review Narrative if the required internal standard compounds are not added to a sample or blank or if the required internal standard compound is not analyzed at the specified concentration.

Actions:

Table 10. Internal Standard Actions for Semivolatile Analysis

Criteria	Action	
	Detect	Non-detect
Area response < 20% of the opening CCV or mid-point standard CS3 from ICAL	J	R
20% < Area response < 50% of the opening CCV or mid-point standard CS3 from ICAL	J	UJ
50% < Area response < 200% of the opening CCV or mid-point standard CS3 from ICAL	No qualification	No qualification
Area response > 200% of the opening CCV or mid-point standard CS3 from ICAL	J-	No qualification
RT shift between sample/blank and opening CCV or mid-point standard CS3 from ICAL > 10.0 seconds	R	R
RT shift between sample/blank and opening CCV or mid-point standard CS3 from ICAL < 10.0 seconds	No qualification	No qualification

All criteria were met __X__
Criteria were not met
and/or see below _____

TARGET COMPOUND IDENTIFICATION

Criteria:

Is the Relative Retention Times (RRTs) of reported compounds within ±0.06 RRT units of the standard RRT [opening Continuing Calibration Verification (CCV) or mid-point standard from the initial calibration]. **Yes?** or No?

List compounds not meeting the criteria described above:

Sample ID	Compounds	Actions
_____	_____	_____
_____	_____	_____
_____	_____	_____

Mass spectra of the sample compound and a current laboratory-generated standard [i.e., the mass spectrum from the associated calibration standard (opening CCV or mid-point standard from initial calibration)] must match according to the following criteria:

a. All ions present in the standard mass spectrum at a relative intensity greater than 10% must be present in the sample spectrum.
b. The relative intensities of these ions must agree within ±20% between the standard and sample spectra (e.g., for an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30-70%).
c. Ions present at greater than 10% in the sample mass spectrum, but not present in the standard spectrum, must be evaluated by a reviewer experienced in mass spectral interpretation.

List compounds not meeting the criteria described above:

Sample ID	Compounds	Actions
_____	_____	_____
_Identified_compounds_meet_the_required_criteria____		_____
_____	_____	_____

Action:

1. The application of qualitative criteria for GC/MS analysis of target compounds requires professional judgment. It is up to the reviewer's discretion to obtain additional information from the laboratory. If it is determined that incorrect identifications were made, qualify all such data as unusable (R).

2. Use professional judgment to qualify the data if it is determined that cross-contamination has occurred.

3. Note in the Data Review Narrative any changes made to the reported compounds or concerns regarding target compound identifications. Note, for Contract Laboratory COR action, the necessity for numerous or significant changes.

TENTATIVELY IDENTIFIED COMPOUNDS (TICS)

NOTE: Tentatively identified compounds should only be evaluated when requested by a party from outside of the Hazardous Waste Support Section (HWSS).

List TICs

Sample ID	Compound	Sample ID	Compound

Action:

1. Qualify all TIC results for which there is presumptive evidence of a match (e.g. greater than or equal to 85% match) as tentatively identified (NJ), with approximated concentrations. TICs labeled "unknown" are qualified as estimated (J).
2. General actions related to the review of TIC results are as follows:
   a. If it is determined that a tentative identification of a non-target compound is unacceptable, change the tentative identification to "unknown" or another appropriate identification, and qualify the result as estimated (J).
   b. If all contractually-required peaks were not library searched and quantitated, the Region's designated representative may request these data from the laboratory.
3. In deciding whether a library search result for a TIC represents a reasonable identification, use professional judgment. If there is more than one possible match, report the result as "either compound X or compound Y". If there is a lack of isomer specificity, change the TIC result to a nonspecific isomer result (e.g., 1,3,5-trimethyl benzene to trimethyl benzene isomer) or to a compound class (e.g., 2-methyl, 3-ethyl benzene to a substituted aromatic compound).
4. The reviewer may elect to report all similar compounds as a total (e.g., all alkanes may be summarized and reported as total hydrocarbons).

5. Target compounds from other fractions and suspected laboratory contaminants should be marked as "non-reportable".
6. Other Case factors may influence TIC judgments. If a sample TIC match is poor, but other samples have a TIC with a valid library match, similar RRT, and the same ions, infer identification information from the other sample TIC results.
7. Note in the Data Review Narrative any changes made to the reported data or any concerns regarding TIC identifications.
8. Note, for Contract Laboratory COR action, failure to properly evaluate and report TICs

All criteria were met __X__
Criteria were not met
and/or see below _____

SAMPLE QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLS)

Action:

1. When a sample is analyzed at more than one dilution, the lower CRQL are used unless a QC exceedance dictates the use of higher CRQLs from the diluted sample. Samples reported with an "E" qualifier should be reported from the diluted sample.
2. If any discrepancies are found, the Region's designated representative may contact the laboratory to obtain additional information that could resolve any differences. If a discrepancy remains unresolved, the reviewer must use professional judgment to decide which value is the most accurate. Under these circumstances, the reviewer may determine that qualification of data is warranted. Note in the Data Review Narrative a description of the reasons for data qualification and the qualification that is applied to the data.
3. For non-aqueous samples, if the solids is less than 10.0%, use professional judgment for both detects and non-detects. If the percent solid for a soil sample is greater than or equal to 10.0% and less than 30.0%, use professional judgment to qualify detects and non-detects. If the percent solid for a soil sample is greater than or equal to 30.0%, detects and non-detects should not be qualified (see Table 11).
4. Note, for Contract Laboratory COR action, numerous or significant failures to accurately quantify the target compounds or to properly evaluate and adjust CRQLs.
5. Results between MDL and CRQL should be qualified as estimated "J".
6. Results < MDL should be reported at the CRQL and qualified "U". MDLs themselves should not be reported.

Table 11. Percent Solids Actions for Semivolatile Analysis for Non-Aqueous Samples

Criteria	Action	
	Detects	Non-detects
%Solids < 10.0%	Use professional judgment	Use professional judgment
10.0% < %Solids < 30.0%	Use professional judgment	Use professional judgment
%Solids > 30.0%	No qualification	No qualification

SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

Sample ID:__ JC20934-5_(Scan)__ Analyte:__Caprolactam_____ RF:_0.189_

[ ] = (41257)(40)/(1924946)(0.189)
= 4.54 ppm Ok

QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

All criteria were met __X___
Criteria were not met
and/or see below _____

FIELD DUPLICATE PRECISION

Sample IDs: _____ JC20934-2/-3_____ Matrix:_____Soil_____

Field duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: if large RPD (> 50 %) is observed, confirm identification of the samples and note differences. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL ug/L	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Field duplicate analyzed as part of this data package. RPD within the required criteria < 50 % for detected target analytes.					

All criteria were met __X__
Criteria were not met
and/or see below ____

OTHER ISSUES

A. System Performance

List samples qualified based on the degradation of system performance during simple analysis:

Sample ID	Comments	Actions

Action:

Use professional judgment to qualify the data if it is determined that system performance has degraded during sample analyses. Inform the Contract Laboratory Program COR any action as a result of degradation of system performance which significantly affected the data.

B. Overall Assessment of Data

List samples qualified based on other issues:

Sample ID	Comments	Actions
_No_other_issues_that_required_the_need_to_qualify_the_data._Results_are_valid_and_can_be_used_for_decission_purposes._____		

Action:

1. Use professional judgment to determine if there is any need to qualify data which were not qualified based on the Quality Control (QC) criteria previously discussed.
2. Write a brief narrative to give the user an indication of the analytical limitations of the data. Inform the Contract Laboratory COR the action, any inconsistency of the data with the Sample Delivery Group (SDG) Narrative. If sufficient information on the intended use and required quality of the data is available, the reviewer should include their assessment of the usability of the data within the given context. This may be used as part of a formal Data Quality Assessment (DQA).
3. Sometimes, due to dilutions, re-analysis or SIM/Scan runs are being performed, there will be multiple results for a single analyte from a single sample. The following criteria and professional judgment are used to determine which result should be reported:
    - The analysis with the lower CRQL
    - The analysis with the better QC results
    - The analysis with the higher results

EXECUTIVE NARRATIVE

SDG No:	**JC20934**	Laboratory:	**Accutest, Florida**
Analysis:	**SW846-8015C**	Number of Samples:	**6**
Location:	BMSMC, Building 5 Area Humacao, PR		

SUMMARY: Six (6) samples were analyzed for the low molecular weight alcohols (LMWAs) list following method SW846-8015C. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

Results are valid and can be used for decision making purposes.

Critical issues:	**None**
Major:	**None**
Minor:	**None**

Critical findings:	**None**
Major findings:	**None**
Minor findings:	**None**

COMMENTS: Results are valid and can be used for decision making purposes.

Reviewers Name: Rafael Infante
Chemist License 1888

Signature: 

Date: June 18, 2016

SAMPLE ORGANIC DATA SAMPLE SUMMARY

Sample ID: JC20934-1
Sample location: BMSMC Building 5 Area
Sampling date: 5/23/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC20934-2
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	120	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	120	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	120	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	120	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	120	ug/kg	1.0	-	U	Yes
sec-Butyl Alcohol	120	ug/kg	1.0	-	U	Yes
Methanol	240	ug/kg	1.0	-	U	Yes

Sample ID: JC20934-3
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	120	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	120	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	120	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	120	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	120	ug/kg	1.0	-	U	Yes
sec-Butyl Alcohol	120	ug/kg	1.0	-	U	Yes
Methanol	240	ug/kg	1.0	-	U	Yes

Sample ID: JC20934-4
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Soil

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	120	ug/kg	1.0	-	U	Yes
Isobutyl Alcohol	120	ug/kg	1.0	-	U	Yes
Isopropyl Alcohol	120	ug/kg	1.0	-	U	Yes
n-Propyl Alcohol	120	ug/kg	1.0	-	U	Yes
n-Butyl Alcohol	120	ug/kg	1.0	-	U	Yes
sec-Butyl Alcohol	120	ug/kg	1.0	-	U	Yes
Methanol	240	ug/kg	1.0	-	U	Yes

Sample ID: JC20934-5
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

Sample ID: JC20934-6
Sample location: BMSMC Building 5 Area
Sampling date: 5/24/2016
Matrix: Groundwater

METHOD: 8015C

Analyte Name	Result	Units	Dilution Factor	Lab Flag	Validation	Reportable
Ethanol	100	ug/l	1.0	-	U	Yes
Isobutyl Alcohol	100	ug/l	1.0	-	U	Yes
Isopropyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Propyl Alcohol	100	ug/l	1.0	-	U	Yes
n-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
sec-Butyl Alcohol	100	ug/l	1.0	-	U	Yes
Methanol	200	ug/l	1.0	-	U	Yes

DATA REVIEW WORKSHEETS

Project Number:___JC20934_____
Date:_____05/23-24/2016_____
Shipping Date:____05/24/2016_____
EPA Region:_____2_____

REVIEW OF VOLATILE ORGANIC PACKAGE

The following guidelines for evaluating volatile organics were created to delineate required validation actions. This document will assist the reviewer in using professional judgment to make more informed decision and in better serving the needs of the data users. The sample results were assessed according to USEPA data validation guidance documents in the following order of precedence: "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846 (Final Update III, December 1996)," specifically for Methods 8000/8015C are utilized. The QC criteria and data validation actions listed on the data review worksheets are from the primary guidance document, unless otherwise noted.

The hardcopied (laboratory name) _Accutest_____ data package received has been reviewed and the quality control and performance data summarized. The modified data review for VOCs included:

Lab. Project/SDG No.: __JC20934_____ Sample matrix: ___SoilGroundwater_____
No. of Samples: _____6_____

Trip blank No.: _____-_____
Field blank No.: _____-_____
Equipment blank No.:___-_____
Field duplicate No.:_____ JC20934-2/-3_____

___X___ Data Completeness
___X___ Holding Times
___N/A_ GC/MS Tuning
___N/A_ Internal Standard Performance
___X___ Blanks
___X___ Surrogate Recoveries
___X___ Matrix Spike/Matrix Spike Duplicate
___X___ Laboratory Control Spikes
___X___ Field Duplicates
___X___ Calibrations
___X___ Compound Identifications
___X___ Compound Quantitation
___X___ Quantitation Limits

Overall Comments:_Low_molecular_weight_alcohols_by_SW-846_8015C_____
_____

Definition of Qualifiers:
J- Estimated results
U- Compound not detected
R- Rejected data
UJ- Estimated nondetect

Reviewer:_____
Date:__June_18,_2016_____

DATA REVIEW WORKSHEETS

DATA COMPLETENESS

MISSING INFORMATION	DATE LAB. CONTACTED	DATE RECEIVED

All criteria were met __X__
Criteria were not met
and/or see below ____

HOLDING TIMES

The objective of this parameter is to ascertain the validity of the results based on the holding time of the sample from time of collection to the time of analysis.

Complete table for all samples and note the analysis and/or preservation not within criteria

SAMPLE ID	DATE SAMPLED	DATE ANALYZED	pH	ACTION
All samples analyzed within the recommended method holding time. All samples properly preserved.				

Criteria

Aqueous samples – 14 days from sample collection for preserved samples (pH $\leq$ 2, 4°C), no air bubbles.
Aqueous samples – 7 days from sample collection for unpreserved samples, 4°C, no air bubbles.
Soil samples- 7 days from sample collection.
Cooler temperature (Criteria: 4 $\pm$ 2 °C): 5°C

Actions

If the VOCs vial(s) have air bubbles, estimate positive results (J) and reject nondetects (R).
If the % solids of soil samples is 10-50%, estimates positive results (J) and nondetects (UJ)
If the % solid of soil samples is < 10%, estimate positive results (J) and reject nondetects (R).
If holding times are exceeded but < 14 days beyond criteria, estimate positive results (J) and nondetects (UJ).
If holding times are exceeded but < 28 days beyond criteria, estimate positive results (J) and reject nondetects (R).
If holding times are grossly exceeded (> 28 days beyond criteria), reject all results (R).
If samples were not iced or if the ice were melted (> 10°C), estimate positive results (J) and nondetects (UJ).

All criteria were met __N/A__
Criteria were not met see below ____

GC/MS TUNING

The assessment of the tuning results is to determine if the sample instrumentation is within the standard tuning QC limits

__N/A_ The BFB performance results were reviewed and found to be within the specified criteria.

__N/A_ BFB tuning was performed for every 12 hours of sample analysis.

If no, use professional judgment to determine whether the associated data should be accepted, qualified or rejected.

List the samples affected: _____

If mass calibration is in error, all associated data are rejected.

All criteria were met __X__
Criteria were not met
and/or see below _____

CALIBRATION VERIFICATION

Compliance requirements for satisfactory instrument calibration are established to ensure that the instrument is capable of producing and maintaining acceptable quantitative data.

Date of initial calibration:_____05/17/16_____
Dates of continuing calibration:_05/17/16 (initial);_05/25/16;_05/26/16_
Dates of final calibration verification:__05/25/16;_05/26/16_____
Instrument ID number:_____GCGH_____
Matrix/Level:_____Aqueous/low_____

DATE	LAB FILE ID#	CRITERIA OUT RFs, %RSD, %D, r	COMPOUND	SAMPLES AFFECTED

Note: Initial, continuing, and final calibration verifications meets method specific criteria in at least one of the column, second column used for confirmation only.

Criteria

All RFs must be > 0.05 regardless of method requirements for SPCC.
All %RSD must be ≤ 15 % regardless of method requirements for CCC.
All %Ds must be ≤ 20% regardless of method requirements for CCC.
It should be noted that Region 2 SOP HW-24 does not specify criterion for the curve correlation coefficient (r). A limit for r of ≥ 0.995 has therefore been utilized as professional judgment.

Actions

If any compound has an initial RF or a continuing RF of < 0.05, estimate positive results (J) and reject nondetects (R), regardless of method requirements.
If any compound has a %RSD > 15%, estimate positive results (J) and use professional judgment to qualify nondetects.
If any compound has a %RSD > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and reject nondetects (R).
If any compound has a % D > 20%, estimate positive results (J) and nondetects (UJ).
If any compound has a % D > 90%, estimate positive results (J) and reject nondetects (R).
If any compound has r < 0.995, estimate positive results and nondetects.

A separate worksheet should be filled for each initial curve

All criteria were met _X_
Criteria were not met
and/or see below _____

V A. BLANK ANALYSIS RESULTS (Sections 1 & 2)

The assessment of the blank analysis results is to determine the existence and magnitude of contamination problems. The criteria for evaluation of blanks apply only to blanks associated with the samples, including trip, equipment, and laboratory blanks. If problems with any blanks exist, all data associated with the case must be carefully evaluated to determine whether or not there is an inherent variability in the data for the case, or if the problem is an isolated occurrence not affecting other data.

List the contamination in the blanks below. High and low levels blanks must be treated separately.

Laboratory blanks

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
All_method_blank_meeth_method_specific_criteria				

Field/Equipment/Trip blank

DATE ANALYZED	LAB ID	LEVEL/ MATRIX	COMPOUND	CONCENTRATION UNITS
No_field/trip/equipment_blanks_included_in_this_data_package.				

All criteria were met __X__
Criteria were not met
and/or see below _____

V B. BLANK ANALYSIS RESULTS (Section 3)

Blank Actions

Action Levels (ALs) should be based upon the highest concentration of contaminant determined in any blank. Do not qualify any blank with another blank. The ALs for samples which have been diluted should be corrected for the sample dilution factor and/or % moisture, where applicable. No positive sample results should be reported unless the concentration of the compound in the samples exceeds the ALs:

ALs = 10x the amount of common contaminants (methylene chloride, acetone, 2-butanone, and toluene)
ALs = 5x for any other compounds

Specific actions are as follows:

If the concentration is < sample quantitation limit (SQL) and ≤ AL, report the compound as not detected (U) at the SQL.
If the concentration is ≥ SQL but ≤ AL, report the compound as not detected (U) at the reported concentration.
If the concentration is ≥ SQL and > AL, report the concentration unqualified.

Notes:

High and low level blanks must be treated separately
Compounds qualified "U" for blank contamination are still considered "hits" when qualifying for calibration criteria.

CONTAMINATION SOURCE/LEVEL	COMPOUND	CONC/UNITS	AL/UNITS	SQL	AFFECTED SAMPLES

All criteria were met ___X___
Criteria were not met
and/or see below _____

SURROGATE SPIKE RECOVERIES

Laboratory performance of individual samples is established by evaluation of surrogate spike recoveries. All samples are spiked with surrogate compounds prior to sample analysis. The accuracy of the analysis is measured by the surrogate percent recovery. Since the effects of the sample matrix are frequently outside the control of the laboratory and may present relatively unique problems, the validation of data is frequently subjective and demands analytical experience and professional judgment.
List the percent recoveries (%Rs) which do not meet the criteria for surrogate recovery.
Matrix: solid/aqueous

SAMPLE ID	SURROGATE COMPOUND				ACTION
	Hexanol	~~DBFM~~	~~TOL-d8~~	~~BFB~~	

_All_surrogate_recoveries_within_laboratory_control_limits._____

QC Limits* (Aqueous)
_____LL_to_UL___ _73_to_123_ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Low)
_____LL_to_UL___ _69_to_121__ ___to_____ ___to_____ ___to_____
QC Limits* (Solid-Med)
_____LL_to_UL___ ____to_____ ___to_____ ___to_____ ___to_____

1,2-DCA = 1,2-Dichloromethane-d4 TOL-d8 = Toluene-d8
DBFM = Dibromofluoromethane BFB = Bromofluorobenzene

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 80 – 120 % for aqueous and 70 – 130 % for solid samples.

Actions:

QUALITY	%R < 10%	%R = 10% - LL	%R > UL
Positive results	J	J	J
Nondetects results	R	UJ	Accept

Surrogate action should be applied:

If one or more surrogate in the VOC fraction is out of specification, but has a recovery of > 10%.
If any one surrogate in a fraction shows < 10 % recovery.

All criteria were met __X___
Criteria were not met
and/or see below _____

VII. A MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD)

This data is generated to determine long term precision and accuracy in the analytical method for various matrices. This data alone cannot be used to evaluate the precision and accuracy of individual samples. If any % R in the MS or MSD falls outside the designated range, the reviewer should determine if there are matrix effects, i.e. LCS data are within the QC limits but MS/MSD data are outside QC limit.

1. MS/MSD Recoveries and Precision Criteria

The laboratory should use one MS and a duplicate analysis of an unspiked field sample if target analytes are expected in the sample. If target analytes are not expected, MS/MSD should be analyzed.

List the %Rs, RPD of the compounds which do not meet the criteria.

Sample ID:__JC20935-2MS/-MSD_____ Matrix/Level:____Groundwater/ow_____
Sample ID:__JC20847-1AMS/-MSD_____ Matrix/Level:____Soil/ow_____

MS OR MSD	COMPOUND	% R	RPD	QC LIMITS	ACTION
MS/MSD%_recoveries_and_RPD_within_laboratory_control_limits					

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All criteria were met _X_
Criteria were not met
and/or see below ____

MS/MSD criteria apply only to the unspiked sample, its dilutions, and the associated MS/MSD samples:

If the % R for the affected compounds were < LL (or 70 %), qualify positive results (J) and nondetects (UJ).
If the % R for the affected compounds were > UL (or 130 %), only qualify positive results (J).
If 25 % or more of all MS/MSD %R were < LL (or 70 %) or if two or more MS/MSD %Rs were < 10%, qualify all positive results (J) and reject nondetects (R).

VII. B MATRIX SPIKE/MATRIX SPIKE DUPLICATE

MS/MSD – Unspiked Compounds

It should be noted that Region 2 SOP HW-24 does not specify a MS/MSD criteria for the unspiked compounds in the sample. A %RSD of < 50% has therefore been utilized as professional judgment.

If all target analytes were spiked in the MS/MSD, this review element is not applicable.

List the %RSD of the compounds which do not meet the criteria.

Sample ID:_____-_____ Matrix/Level/Unit:_____-_____

COMPOUND	SAMPLE CONC.	MS CONC.	MSD CONC.	% RSD	ACTION

Actions:

* If the % RSD > 50, qualify the positive result in the unspiked samples as estimated (J).
* If the % RSD is not calculated (NC) due to nondetected value, use professional judgment to qualify the data.

A separate worksheet should be used for each MS/MSD pair.

All criteria were met __X__
Criteria were not met
and/or see below _____

VIII. LABORATORY CONTROL SAMPLE (LCS) ANALYSIS

This data is generated to determine accuracy of the analytical method for various matrices.

1. LCS Recoveries Criteria

Where LCS spiked with the same analyte at the same concentrations as the MS/MSD? **Yes** or No. If no make note in data review memo.

List the %R of compounds which do not meet the criteria

LCS ID COMPOUND % R QC LIMIT

___Recoveries_within_laboratory_control_limits._____
_____
_____
_____
_____

* QC limits are laboratory in-house performance criteria, LL = lower limit, UL = upper limit.
* If QC limits are not available, use limits of 70 – 130 %.

Actions:

QUALITY	%R < LL	%R > UL
Positive results	J	J
Nondetects results	R	Accept

All analytes in the associated sample results are qualified for the following criteria.

If 25 % of the LCS recoveries were < LL (or 70 %), qualify all positive results (j) and reject nondetects (R).
If two or more LCS were below 10 %, qualify all positive results as (J) and reject nondetects (R).

2. Frequency Criteria:

Where LCS analyzed at the required frequency and for each matrix? Yes or No.
If no, the data may be affected. Use professional judgment to determine the severity of the effect and qualify data accordingly. Discuss any actions below and list the samples affected.

All criteria were met ___X___
Criteria were not met
and/or see below _____

IX. FIELD/LABORATORY DUPLICATE PRECISION

Sample IDs: ___JC20934-2/-3_____ Matrix:_____Soil_____

Field/laboratory duplicates samples may be taken and analyzed as an indication of overall precision. These analyses measure both field and lab precision; therefore, the results may have more variability than laboratory duplicates which only laboratory performance. It is also expected that soil duplicate results will have a greater variance than water matrices due to difficulties associated with collecting identical field duplicate samples.

The project QAPP should be reviewed for project-specific information.
Suggested criteria: RPD ± 30% for aqueous samples, RPD ± 50 % for solid samples. If both samples and duplicate are <5 SQL, the RPD criteria is doubled.

COMPOUND	SQL	SAMPLE CONC.	DUPLICATE CONC.	RPD	ACTION
Field duplicate analyzed with this data package. RPD within laboratory and generally acceptable control limits.					

Actions:

Qualify as estimated positive results (J) and nondetects (UJ) for the compound that exceeded the above criteria. For organics, only the sample and duplicate will be qualified.

If an RPD cannot be calculated because one or both of the sample results is not detected, the following actions apply:

If one sample result is not detected and the other is greater than 5x the SQL qualify (J/UJ).

If one sample value is not detected and the other is greater than 5x the SQL and the SQLs for the sample and duplicate are significantly different, use professional judgment to determine if qualification is appropriate.

If one sample value is not detected and the other is less than 5x, use professional judgment to determine if qualification is appropriate.

If both sample and duplicate results are not detected, no action is needed.

All criteria were met __N/A__
Criteria were not met
and/or see below _____

X. INTERNAL STANDARD PERFORMANCE

The assessment of the internal standard (IS) parameter is used to assist the data reviewer in determining the condition of the analytical instrumentation.

List the internal standard area of samples which do not meet the criteria.

* Area of +100% or -50% of the IS area in the associated calibration standard.
* Retention time (RT) within 30 seconds of the IS area in the associated calibration standard.

DATE	SAMPLE ID	IS OUT	IS AREA	ACCEPTABLE RANGE	ACTION

Actions:

1. IS actions should be applied to the compound quantitated with the out-of-control ISs

QUALITY	IS AREA < -25%	IS AREA = -25 % TO – 50%	IS AREA > + 100%
Positive results	J	J	J
Nondetected results	R	UJ	ACCEPT

2. If a IS retention time varies more than 30 seconds, the chromatographic profile for that sample must be examined to determine if any false positive or negative exists. For shifts of a large magnitude, the reviewer may consider partial or total rejection of the data for the sample fraction.

All criteria were met __X__
Criteria were not met
and/or see below _____

XII. SAMPLE QUANTITATION

The sample quantitation evaluation is to verify laboratory quantitation results. In the space below, please show a minimum of one sample calculation:

JC20934-1

Hexanol RF = 67.60

[ ] = (328444)/(67.60)

= 4,859 ppm OK

All criteria were met __X__
Criteria were not met
and/or see below ____

XII. QUANTITATION LIMITS

A. Dilution performed

SAMPLE ID	DILUTION FACTOR	REASON FOR DILUTION

B. Percent Solids

List samples which have ≤ 50 % solids

Actions:

If the % solids of a soil sample is 10-50%, estimate positive results (J) and nondetects (UJ)

If the % solids of a soil sample is < 10%, estimate positive results (J) and reject nondetects (R)